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BERKELEY WATERFRONT PLAN

Summary of Opportunities and Constraints Background Analyses

January 28, 1985


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CONTENTS OF THIS REPORT

The following report combines two documents. The bulk of it is a series of eleven technical background papers prepared by the consultant team members. The other, much briefer, document is a Summary of Opportunities and Constraints that distills the major conclusions of the technical reports into a form that can be more easily grasped.

The 11 topical areas are combined into seven headings for the purpose of the Opportunities and Constraints summary:

<u>Summary Heading</u>	<u>Technical Paper Title</u>
LAND USE AND PUBLIC POLICY	I. Land Use and Planning Context
ENVIRONMENTALLY SENSITIVE AREAS	II. Site History and Cultural Resources III. Physical and Biological Factors IV. Visual Resources
UTILITIES	V. Utilities
TRAFFIC/TRANSPORTATION	VI. Traffic and Transportation
RECREATION/OPEN SPACE	VII. Recreation and Open Space
HOUSING	VIII. Demographics and Housing
ECONOMIC DEVELOPMENT	IX. Employment X. Market Considerations XI. Fiscal Considerations

Next Steps

The community will have the opportunity to explore the implications of the technical data in a series of focused workshops during February and March. Simultaneously, the consultant team will begin the next phase of work, i.e., Refinement and Evaluation of Generic Land Use Alternatives. This phase will culminate in an Evaluation of Alternatives report in late spring.

BERKELEY WATERFRONT PLAN
SUMMARY OF OPPORTUNITIES AND CONSTRAINTS
BACKGROUND ANALYSES

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Summary of Opportunities and Constraints

SUMMARY OF OPPORTUNITIES AND CONSTRAINTS

INTRODUCTION AND PURPOSE

There are three kinds of constraints which limit or define appropriate development on the Berkeley Waterfront: capacity limits, such as traffic and utilities, sensitivity constraints such as visual and environmental resource value, and policy constraints. The first two can be dealt with in a fairly straightforward way and can usually be expressed as quantifiable limits and/or specified mitigation measures. The policy constraints are a different matter. Only a few can be expressed in hard terms, mainly because public policy regarding this site is only now being established. Even more to the point, the policies that do exist often have contradictory implications. For example, provision of a maximum amount of recreation space, if taken literally, would conflict with provision of a maximum amount of job and revenue-generating development.

The purpose of this Opportunities and Constraints summary is to:

1. Document the existing conditions and planned improvements for the Waterfront and surrounding context (these will eventually be recast as the Existing Setting portion of the environmental impact report).
2. Distill the overriding constraints and the special site opportunities that should be incorporated into the land use alternatives.
3. Serve as an information base for the Evaluation of Alternatives phase.

Thus, this report is both an integral part of the environmental assessment process, and the foundation for public evaluation of the implications of alternative policy choices. The City's policy emphasis will gradually be translated into measurable evaluation criteria, land use alternatives will be assessed relative to those criteria, and the community can make an informed choice among conflicting priorities, and thus among potential plans.

In very brief form, key findings to date are as follows:

Land Use/Public Policy: The site represents a prime opportunity to link the city to the major amenities of the Waterfront, and to foster beneficial effects on surrounding land uses. The key obstacle to integrating the Waterfront with the city is the physical isolation created by the Interstate 80 freeway. The major source of public policy for the site is the City of Berkeley; other regulatory agencies include BCDC, U.S. Fish and Wildlife Service, California Department of Fish and Game and National Marine Fisheries Service.

Environmentally Sensitive Areas: The site offers significant opportunities for enhancement of environmental and visual resources, which can be a component of the recreation/open space system, and with proper mitigation can also

be compatible with development on a portion of the site. However, the existing site is a man-made artifice that will require significant mitigation and enhancement programs to foster natural processes and accommodate increased human activity.

Recreation/Open Space: The plan for the site must create a strong link in the continuous East Bay shoreline trail system, of a sufficient size and quality to serve as a regional open space resource. There are a large number of recreational activities well suited to both the site and to identified needs, and the waterfront represents an ideal opportunity to accommodate many of these activities.

Traffic: Both transit and traffic access to the site suffer from the same problems: key access links are heavily loaded, restricting the amount of access capacity to the site unless expensive improvements are undertaken. Caltrans' proposed Interstate 80 corridor improvements will substantially increase capacity in the short term. However, before the year 2005, regional growth in travel demand will utilize that increased capacity, once again restricting access to the site. All but one of the existing bottlenecks will re-occur and traffic diversion levels will exceed current volumes. The only exception is the additional access capacity gained by improvements to the Ashby interchange. Transit opportunities are substantial, indicating the possibility of achieving a very high percentage of transit use at the site. But financial constraints affecting the regional transit systems will likely require developer subsidy of transit improvements.

Utilities: Several of the utility systems are insufficient to serve more than a minimal amount of development on the site. Some require only on-site improvements phased in concert with new development. However, others may require off-site improvements. For instance, an additional trunk sewer line would have to be run under the freeway to support more than 1.3 million square feet of office space or 1,100 dwelling units, including development on City land surrounding the marina. Such future connections to the main interceptor would have to be approved by EBMUD. Complicating the sewer capacity question is the fact that the main interceptor currently overflows during periods of wet weather, due to infiltration/inflow problems throughout the East Bay collector system.

Housing: There is substantial documented need for housing in Berkeley, and the Waterfront site could provide a variety of opportunities to help satisfy that need, through on-site development, off-site development, or contribution to the city's housing programs. In addition, housing need generated by development at the Waterfront or housing impacts created in adjacent neighborhoods will require a carefully tailored housing component to the Waterfront plan.

Economic Development: There is a significant amount of market demand for a wide range of uses, including uses which generate a high proportion of job opportunities targeted to Berkeley needs, and including both market rate and rental housing.

The next step will be to test the economic feasibility and fiscal impacts of various land use alternatives, and to determine the appropriate mix of uses that can at minimum be self-sustaining (i.e., carry the cost of necessary capital improvements and operating expense), and can potentially provide surplus revenues to fund other city priorities.

LAND USE AND PUBLIC POLICY

SURROUNDING LAND USE AND PROPOSED PROJECTS

The main aspects of the land use context which affect the future of the site are 1) the concessions and potential future development on city lands surrounding the Berkeley Marina; 2) the leases on Santa Fe property north of Virginia Street; and 3) trends and development patterns (uses, heights, open space system, potential linkages, etc.) in the surrounding area. These are discussed in detail under Land Use and Planning Context.

The most significant future projects in the vicinity are the redevelopment areas in West Berkeley and Emeryville and the plans now being prepared by Santa Fe and the City of Albany for the Golden Gate Fields lands just north of the study site.

EXISTING PUBLIC POLICY

City of Berkeley Policy for Site and Adjacent Lands. Proposals for the waterfront must conform to relevant provisions of the Master Plan. However, that plan designates the site "for further study", and gives only general principals for planning. For instance, the Master Plan implies that all commercial areas should respect the role of downtown as the center of commerce, government, and cultural activities for the city (Policy 1.20), and it identifies University Avenue and Interstate 80 as scenic routes.

City policy concerning the waterfront lands is more specifically expressed in the Preliminary Goals and Policies endorsed by the Council on January 17, 1984. These are now being incorporated by the consultants into the Evaluation Criteria by which alternative proposals for the waterfront lands can be judged; they will be refined as part of the continuing Waterfront planning process.

As for the areas east of the freeway, a portion is governed by the West Berkeley Redevelopment Area Plan, and a portion by the zoning ordinance. For instance, allowable heights in the Redevelopment Area range from 35 to 50 feet, and in the remainder of West Berkeley range from 35 to 100 feet. Allowable uses and other development standards are also guided much more closely in the Redevelopment Area, and provide a better indication of the city's recent intentions regarding the future of the West Berkeley neighborhood.

Policies and Proposals for the Adjacent Cities: The City of Emeryville is now in the process of revising the Emeryville Bayfront Development Plan, which is of major relevance to Berkeley Waterfront plans. A draft plan is expected to be released within the next few months.

In Albany, as already mentioned, the most significant factor influencing planning for the Berkeley Waterfront are the plans currently in preparation for the Golden Gate Fields lands. Conceptual plans by the property owner are tentatively scheduled for release in February 1985. In addition, the City has proposed a marina and commercial/recreational development in the Albany peninsula west of the racetrack.

Bay Conservation and Development Commission Policy: The BCDC jurisdiction zone is measured 100 feet inland from the point of highest tidal action (8.6 feet Mean Lower Low Water datum along the Berkeley shoreline). The BCDC San Francisco Bay Plan designates the entire west-facing shoreline zone of the site as waterfront park or a beach, and recommends development of public and commercial recreation areas. BCDC policy prohibits fill in the bay, except for minor fill related to the improvement of shoreline appearance or enhancement of public access.

Miscellaneous Required Approvals: In addition to BCDC approval, a permit from the U.S. Army Corps of Engineers (COE) would be required for any proposed dredging, filling or construction in or affecting the Bay waters, up to the line of mean high water. A certificate from the San Francisco Bay Regional Water Quality Control Board (RWQCB) verifying satisfactory landfill closure for the Meadow and North Basin Strip would be necessary for COE and BCDC permits.

Development plans affecting water and shoreline areas must be reviewed by the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), and National Marine Fisheries Service (NMFS) for impacts on the area's natural and wildlife resources. These agencies may recommend approval or denial of Corps and BCDC permits, and recommend conditions and mitigation measures for certain impacts. Comments from these agencies are coordinated through the State Resources Agency and forwarded to COE for inclusion in its permit application process. There are on-site opportunities to address goals of the USFWS and CDFG by protecting and enhancing wildlife values.

The City of Berkeley, on behalf of the State Lands Commission (SLC), must find that development plans are consistent with the public trust easement which covers all water areas around the site.

ENVIRONMENTALLY SENSITIVE AREAS

The Berkeley Waterfront exists by virtue of extensive, prolonged human manipulation of the Bay shoreline. A series of essentially "unnatural acts" has created a relatively "natural" formation of land and waters that is now an integral part of the East Bay shoreline. As such, the planning area enjoys great opportunities for further physical manipulation and improvement of land and shoreline into a number of possible uses. The same human actions that were responsible for these opportunities, however, created certain potential liabilities (constraints) that require special attention. The site's position

in Bay waters and overlying unconsolidated Bay muds requires careful siting of structures, closing of old landfills, special design of foundations, protection of shoreline stability, conservation of Bay tidelands and wildlife habitats, and a judicious approach to any developed use of the surrounding aquatic environment. The wind that buffets this flat man-made promontory, and the noise levels from adjacent freeway traffic, impose their own kinds of constraints on any designed use of the site.

The section following summarizes the primary physical and biological conditions which on the one hand exhibit existing values and suggest new opportunities, and on the other, are sensitive and thus impose limitations and special conditions on development and use.

GEOLOGY, SOILS, AND LANDFILL CLOSURE

Availability of Undeveloped Land: The major opportunity at the site is the availability of a large area of undeveloped land in an otherwise heavily developed urban setting. After landfill closure, in accordance with State specifications, about 167 acres of flat, open space will be suitable for development for recreational, residential, commercial or other uses. (Development at the Brickyard will not require specific landfill closure measures.)

Landfill Closure: The primary constraint which will determine the location and design of development on the site is the necessity for appropriate closure of the landfills. Preparation and construction on the site could interfere with the closed landfill by reversing or disrupting any of the measures undertaken during landfill closure. For example, no major excavation can occur on the site; this precaution will preclude the installation of substantial underground structures. However, shallow underground utilities can be installed at the site.

Settlement of the site is a function of both underlying unconsolidated bay mud and compaction properties of the land fill. The rate of ongoing settlement will increase at least temporarily from the placement of additional fill and structural loads on the landfill. The Meadow fill will experience more future settlement from applied load than the North Basin Strip or Brickyard. Therefore, structures on the Meadow will require more elaborate foundation design than on other portions of the site. Portions of the Meadow will also require additional filling to raise the ground surface elevation. The North Basin Strip, while at a sufficient elevation, has too thin a soil cover in parts for effective closure of the landfill. Filling will thus be necessary to increase the soil cover depth. Settlement will occur on the North Basin Strip from past filling and future structural loads, but is expected to be less than that at the Meadow. Low structures (two stories or less) at the North Basin Strip will not require the pile-supported foundations which would be required on the Meadow. The Brickyard requires no additional filling before development. Because of the nature of the fill material, settlement is not expected to occur there from either past or future loading. Buildings of up to three stories could be constructed without pile support.

Differential Settlement: Landfill materials as well as bay mud exhibit varying conditions of consolidation, decomposition, and compaction, causing settlement to occur at different rates and amounts. Differential settlement is more likely to continue at the Meadow than at the North Basin Strip, and is least significant at the Brickyard. Utility lines and structures will require special design and construction to resist damage from differential settlement.

Seismic activity (earthquakes; tsunami waves) could result in human injury and property damage at the site. Proper design and construction of buildings will reduce the potential for damage. Secondary effects such as ground lurching and rupture could destabilize the perimeter slopes facing the Bay. Structures should not be located near these slopes.

Methane generated by continuing decomposition of landfill material could be a significant hazard at the site. Large expanses of pavement will promote the accumulation of methane, increasing the hazard of ignition or explosion of the gas. Open, unpaved areas will facilitate venting of the gas, reducing this hazard. Detectable amounts of methane have accumulated at the North Basin Strip, and methane generation can be expected at the Meadow. The rate of methane production at the Meadow and North Basin Strip is probably decreasing and will continue to decrease because of the age of the fill material. The Brickyard does not generate significant amounts of methane. Venting systems to prevent the accumulation of methane will eliminate this hazard at the Meadow and North Basin Strip.

Shorelines and Beaches: The extensive shoreline of the site is almost entirely rip-rapped to prevent erosion and maintain stability. The need for this kind of shoreline protection is not likely to change. However, beaches could be developed along certain segments of the shoreline to create new opportunities for water-related recreation in Berkeley. Areas undergoing current sediment deposition probably represent the most stable locations for beaches. These include Brickyard Cove, a portion of the North Basin, and the Ashby shoal. A beach could probably be constructed using nearby sand sources. A preliminary study of sediment from the Ashby Shoal indicates that there is suitable material. Man-made beaches at any sites would be subject in varying degree to erosion by waves and currents. For example, instability and erosion of the man-made Crown Beach in Alameda have been recurring problems. Replenishment of the sand at that beach and construction of sheet-pile dikes perpendicular to the shore have been required to decrease erosion. While these measures have retarded the amount of erosion of the beach, further measures to stabilize the beach will probably be necessary. Similar problems will occur at the Berkeley site if a beach is constructed at a location which is exposed to wind and wave erosion. A study to assess the long-term stability should be undertaken before constructing a wet beach at any location.

Alternately, a dry beach, protected from wave erosion by a seawall, could be constructed at any of the possible sites. However, the physical separation of the beach and Bay water may detract from the recreational value of the beach.

Constructing a seawall will increase the initial cost of a beach but reduce future expenses for beach replenishment and stabilization; an intertidal ("wet") beach will be less costly initially, but may impose higher maintenance costs. Either a "dry" or "wet" beach will require a fill permit from BCDC and the Army Corps of Engineers, as discussed under Public Policy.

HYDROLOGY, DRAINAGE, AND WATER QUALITY

Water Quality. The site enjoys an extensive Bay shoreline, suggesting numerous kinds of water-related recreation, such as boating, fishing and swimming. A beach, as suggested above, would greatly enhance the present shoreline for recreational activities. However, the poor quality of Bay water in the site vicinity may limit water-contact recreation. This constraint can be mitigated either by locating the beach away from sources of pollution, or by improving the quality of water discharged by the creek and storm drains in the vicinity. Both approaches are considered here briefly.

A monitoring program of water quality in the vicinity could identify the areas of best water quality where body-contact water recreation would be safest. These probably occur along segments of the shoreline that are farthest from the outfalls for Codornices, Schoolhouse, Strawberry and Potter Creeks. Alternatively, the outfalls of the creeks could be extended further onto the Bay or moved laterally to discharge at a safe distance from water recreation areas.

The outflow from the storm sewers theoretically could be treated before release into the Bay. However, treatment of storm runoff would probably be infeasible because of the cost and lack of available treatment capacity. Control of this pollution at its source is very difficult, since the sources of urban pollution and runoff are so widely distributed throughout the urban watershed that is drained by the creeks. Regular cleaning of streets, catch basins, and storm sewers, and enforcement of anti-dumping ordinances, could improve the quality of water discharged by storm outfalls. Public education is necessary, however, to decrease littering, illegal dumping of wastes into storm sewers, and improper disposal of animal wastes.

Installation of sand filters at creek outfalls could supplement the benefits accruing from more effective pollution source control in Berkeley, to the benefit of the quality of near-shore water. Filters do require proper maintenance and periodic cleaning to function properly.

Flooding. The site is susceptible to flooding from high tides and tsunamis. Portions of the Meadow and North Basin Strip will be unsuitable for placement of structures until filled to acceptable elevations. Flooding could also be prevented by raising the level of perimeter dikes at the site. The Brickyard is wholly above the level of the 100-year tide and tsunami, and can be developed without new filling or improvement of dikes.

Leachate. The presence of subsurface leachate at the site prevents the use of groundwater at any locations on the site. Large or deep excavations could induce leachate to escape into the surface environment or into adjacent Bay waters. Therefore, no underground structures can be built at the site.

Drainage. Proper grading to create positive drainage, and an effective storm drainage system will be necessary on developed portions of the site. Undeveloped portions will also require effective drainage to minimize water infiltration and generation of leachate in the landfills. The proximity of the Bay to the site provides a convenient body of water for the discharge of runoff. However, urban pollutants in runoff from the site will further deteriorate the quality of near-shore water if allowed to drain into the Bay without at least minimal treatment (e.g., sand filters).

BIOLOGICAL RESOURCES

Upland terrestrial habitats. Several important opportunities exist within the project area to protect and enhance the biological value of both terrestrial and marine habitats. On the existing man-made uplands, at present a mix of ruderal ("weedy") and barren, littered areas, new habitats can be developed, ranging from fully landscaped to "semi-natural" areas which could maintain existing wildlife as well as attract more diverse wildlife. Areas in the Berkeley Marina and the completed portion of the North Waterfront Park, neighboring the project area on the west, serve as examples of some of the successful landscaping approaches that are available, using native or naturalized plant species.

The opportunities to protect and enhance the area's wildlife use do not preclude development if land uses and development sites are carefully selected, separated, and buffered. However, there are some clear and potential constraints to development, if habitat is to be maximized. If most of the existing upland areas are developed and/or landscaped, ruderal vegetation and its associated wildlife will be displaced. This weedy cover, while not aesthetically attractive, provides useful habitat for a number of common bird and animal species.

Exposure to persistent wind and salt air conditions, as well as the soil conditions, will constrain the plant species that can be used to landscape developed and open space areas. However, both native and naturalized plants have been used successfully in landscaped areas of the Berkeley marina.

Shoreline. Similarly, the shoreline exhibits great potential for protecting and improving fish and wildlife habitat and recreational use. Generally, a clean-up both of litter and of water quality from storm drain effluent entering the project area would be a step toward improving existing habitat. More elaborate proposals to create or expand habitats by introducing mixed structural and vegetative assemblages could increase the ecological values of the shoreline area, but will have to be carefully designed. Possible enhancement

projects include: mudflat enhancement and encouragement through revegetation of a salt marsh in Brickyard Cove; creation of a bird refuge by cutting off the southern tip of Brickyard spit as an island and creating diversified "niches"; and creation of transition buffer zones between lands along the North Basin and South Basin strips.

Intertidal and aquatic habitats. Intertidal and submerged mudflats along the site's water perimeter are valuable wildlife areas, particularly for shellfish and water birds. Particularly in the fall, winter, and early spring, waterfowl and shorebirds make heavy use of the shallow Berkeley shore and water areas. Any development that would reduce or eliminate these areas or disturb wildlife during peak periods of use would adversely impact the area's biological resources, either temporarily or permanently. Activities that may alter the existing mudflats include: any dredging; filling to create beaches; attempting to establish a salt marsh in the northeast corner of Brickyard Cove, at the expense of the mudflat (which, in itself, is a highly productive intertidal habitat) should be carefully considered.

In addition, wildlife use of the water-related portions of the project area, specifically by water birds in Brickyard Cove, would constrain the types of land uses that would be appropriate for adjacent areas, and may dictate the need for buffer zones. For example, plans to provide a beach for public recreation use in or adjacent to Brickyard Cove may conflict with water bird use. Bird numbers in this area increase in August and remain high through spring, leaving only a few months in late spring and the first half of summer when bird use is relatively low and when conflicts between human and bird activities would be minimal.

Finally, continued poor water quality at storm drain outfalls could detract from shoreline habitat enhancement efforts.

CLIMATE AND AIR QUALITY

Climate. Site planning should be done with a persistent west wind in mind. Buildings should be aligned in a north-south orientation, forming interior corridors and courts that are sheltered yet exposed to the south for sunlight. To minimize infiltration of cool air, doorways should be located on the east or interior side of the buildings. Landscaping should include dense trees and shrubs that could serve as windbreaks.

Air pollutants. Development along the I-80 corridor will be subject to potentially high concentrations of carbon monoxide (CO). This could restrict developments to non-sensitive uses, since the measures to reduce CO concentrations are limited. "Sensitive uses" generally are defined to include residential areas, playgrounds, schools, hospitals and nursing homes.

NOISE

Development along the I-80 corridor will be subject to high noise levels. Special design measures will be required, such as noise walls, use of certain building materials, or installation of noise insulation, to achieve acceptable interior noise levels. Even so, it may be difficult to adequately reduce noise levels in exterior developed locations and in open space recreation areas along I-80.

VISUAL RESOURCES

The following descriptive text will be used in conjunction with the series of photographs in the Visual Resources section to formulate the specific criteria against which visual impact will be measured.

Views from the Site. There are several points on the waterfront which afford unobscured and dramatic views to the Bay, especially the Brickyard Spit, the western portion of North Waterfront Park, the frontage road south of University, and Shorebird Park. Other areas provide important views back to the Berkeley hills; notably the eastern portion of North Waterfront Park and the axis of University Avenue.

In addition, there are several key points of orientation, such as the entrance to the site from the east (at University), and from the south (Frontage Road at the Brickyard).

All of these views from and within the site are important resources to be protected by guidelines or regulations on the location, pattern, and massing of landscaping and development.

View Corridors. The most important view corridor is the one created by University Avenue from Martin Luther King Way to the site. Gilman Street is next in importance, because it provides both a physical and a visual link to the site. These two view corridors should receive special treatment, such as landscaped open space, limitation of building heights, and possibly landmark features of some sort, to reinforce the connection of the waterfront back to the city.

The pattern of open space and development should also respond to the remaining east-west streets and visual corridors on the other side of the freeway.

Views from the Hills. As described in Visual Setting, these are not the most constraining factors in visual sensitivity of the site. From the hills, views of the Bay, the San Francisco skyline, the bridges, and the Marin Hills far overshadow the importance of the waterfront lands, even at the lowest-elevation view impact zone. However, the open space and development pattern should be imageable and attractive as viewed from this perspective.

Views from the Freeway. Presently, the freeway divider fence and landscaping obscure views toward the waterfront at many locations. Future edge treatment and landscaping of the freeway should respond to opportunities for views to the Bay, as should the location and massing of development and site landscaping.

UTILITIES

The Utilities section of this report details the existing infrastructure systems: sewer, water, electric, storm drainage, gas, and telephone. For the last three, service to the Berkeley Waterfront probably does not pose any problems that cannot be handled by on-site improvements phased in concert with new development. Electric service may be more of a constraint, since a new 21,000 volt system would have to be run in from Pacific Gas and Electric's El Cerrito Station if more than 1,000 residential units or an equivalent amount of office space are planned on the waterfront lands. Sewer and water constraints are summarized below.

Sanitary Sewer. The existing sanitary service to the waterfront area is adequate to support current demand but would be incapable of supporting new large-scale development without improvements. First, although the collection system does have additional capacity, it is to be reserved for development on public lands in the marina area. Therefore, any development on private lands would be responsible for a collection system to get sewage to the 16-inch line extending under the freeway.

The more important constraint to development is that of treatment capacity. The interceptor flows only half full during dry weather, but overflows during periods of wet weather. EBMUD has indicated that full use can be made of the existing 16-inch connection to their interceptor, but additional connections could be a problem: another eight-inch connection to the interceptor would be probably be allowed, a 12-inch connection might be allowed and a 24-inch might not be allowed. However, any future connections would need to be evaluated in terms of the type of development anticipated before a decision could be made. The following table depicts preliminary estimates of the levels of residential or commercial development which could be supported by available capacity in

the existing 16-inch line under the freeway and by a range of additional connections. These are preliminary and will be refined further as additional information becomes available.

TABLE 1

	Existing Capacity		New 8"	New 12"	New 24"
Residential Dwelling Units	1,100 or	plus	506 or	1,500 or	10,000 or
Office 1,000 sq. ft.	1,300	plus	618	1,800	10,000

Water. Water service to the waterfront area is currently provided by EBMUD with a 12-inch line under the freeway at Hearst Avenue and another at Gilman Street. EBMUD has identified two water-related constraints for new development: fire flows and domestic consumption. The City of Berkeley has stated all new structures in the waterfront must be equipped with automatic sprinklers for fire protection, and that the two existing lines must be looped or connected. Preliminary estimates indicate that if the two lines are looped approximately 2,500 to 3,500 gallons per minute (gpm) would be available which may meet fire demand dependent upon the type of development anticipated. The City Fire Department has indicated business districts or industrial areas can require as much as 4,000 gpm assuming sprinkler protection, dependent upon the actual level and type of development. Residential development would require in the order of 2,000 gpm. Dependent upon the amount and type of development anticipated, improvements may be necessary to support domestic consumption. EBMUD indicate the current lines, when looped, could probably support upward of 1,000 dwelling units but not significantly more. If additional development is anticipated, another line will probably have to be extended under the freeway to a 33-inch line in San Pablo Avenue.

TRAFFIC AND TRANSPORTATION

Existing Traffic Constraints. Inadequate freeway capacity and existing congestion on I-80 limit access to the Berkeley waterfront from the south and to the north during the evening northbound congestion between the Bay Bridge and Ashby Avenue causes the diversion of traffic from the freeway to parallel routes such as West Frontage Road, Sixth/Seventh Street and San Pablo Avenue. The lack of full directional access to the waterfront at the Ashby and University Avenue interchanges shifts the demand for northbound I-80 access to the Gilman and Powell Street interchanges resulting in an uneven distribution of interchange traffic.

Although freeway diversion places an unnecessary traffic burden on the intersections and interchanges serving the waterfront, a key constraint on access is the operational complexity of the traffic "gateways" to the site.

All traffic - whether it be regional traffic on the freeway or local traffic on public streets east of the freeway - can only reach the Berkeley waterfront by passing through one of four interchanges: at Powell, Ashby, University or Gilman. The close spacing of intersections at the Gilman, University and Powell interchanges creates operational problems which reduce the traffic capacity of the interchanges.

Traffic Constraints After Caltrans Improvements. Although vehicle demand in the I-80 corridor will continue to increase through the year 2005, Caltrans' proposed widening of the freeway should provide initial relief from the morning southbound and evening northbound congestion that is currently being experienced. This reduction in freeway congestion could be expected to reduce the amount of northbound and southbound freeway traffic currently diverting to parallel routes such as West Frontage Road and Sixth/Seventh Street. Reconstruction of the Ashby and University Avenue interchanges to provide full directional access would spread the traffic demand more evenly to the Gilman, University, Ashby and Powell interchanges. The reduction in freeway diversion and better utilization of the Ashby and University interchanges would result in fairly low levels of interchange utilization with considerable capacity available to accommodate additional traffic from new development in the waterfront area.

At some time before the year 2005, northbound and southbound traffic demand on I-80 during peak periods is projected to exceed the increased capacity of the freeway, producing congestion and freeway diversion exceeding current levels. If this were to happen, waterfront traffic capacity would be limited to the amount of additional capacity created by the reconstruction of the Ashby Avenue interchange unless further improvements were made to the interchanges.

Potential modifications would be limited by the willingness of Caltrans to approve the changes, the need for additional right-of-way along the waterfront and the costs and potential benefits of the improvements. Any widening of freeway on-ramps could produce freeway volumes at the merge point with I-80 that exceed the capacity of the freeway lanes. If this were the case, Caltrans would probably be unwilling to approve the ramp widenings. It should also be remembered that the effectiveness of any on-ramp widenings would depend on the ability of traffic to get through the traffic signals to the ramps. Increasing ramp width does not improve development potential if intersection capacity prevents utilization of the additional ramp lanes. Widening of off-ramps is an improvement that may receive little opposition from Caltrans and whose feasibility would depend on the availability of right-of-way. Widening of West Frontage Road or the east-west arterials would also increase capacity, but would be expensive and probably require additional environmental impact studies.

Transit/Ridesharing. Increases in freeway and local intersection congestion would probably create a greater use of transit and ridesharing. A similar shift in transportation modes and increase in auto occupancy have been

observed in transbay traffic due to congestion on the Bay Bridge. The existing transit system serving Berkeley and the waterfront site do have unused capacity available on local routes and in the off-peak direction on transbay routes.

The Berkeley Trip office and the RIDES program, offer local mechanisms for coordinating transit and ridesharing activities. It is therefore assumed that a relatively high shared ride and transit mode split can be achieved on this site.

Transit access to the Berkeley waterfront suffers from much the same problems as vehicular traffic access: key links in the route serving the site are heavily-loaded (e.g., between Rockridge BART and the UC campus on the 51M line and the Transbay Tube on BART) restricting the amount of additional patronage that can be accommodated without expensive capacity expansions. Service improvements on BART would increase capacity systemwide, but the majority of the improvements would benefit Concord/Daly City commuters. Any improvements in AC Transit service to the waterfront to accommodate development would probably have to be funded in large part by the developer.

Given that the automobile is still the most frequently used form of transportation for most land uses, the traffic capacity of the four interchanges providing access to the Berkeley waterfront would probably be the key transportation constraint on waterfront development. Traffic conditions might not be as bad as Caltrans has projected if development were to occur at the waterfront instead of farther north on I-80 or if the travel patterns associated with waterfront land uses were oriented in the off-peak direction where more capacity existed. Development of a plan for the Berkeley waterfront should consider not only the short-term traffic capacity for development but also the lower, long-term traffic capacity and the need for additional improvements. It should also be remembered that the traffic capacity of the study area intersections serves not only the Berkeley waterfront but also downtown Berkeley, West Berkeley, Emeryville and Albany access needs.

RECREATION AND OPEN SPACE

The following section will summarize the major policy direction and specific recommendations for each of the nine recreation/open space categories to be potentially located on the Berkeley Waterfront: regional open space, shoreline trail, sports facilities, environmental preserves, boating/marina facilities, visual/scenic activities, social/educational activities, fishing/beach activities, and overnight lodging/camping.

Regional Parkland and Shoreline Trail. Because of the size of the site, its strategic location and accessibility, and the fact that there are already almost 100 acres of existing and proposed parks on the study site, a future park is bound to serve more than the local Berkeley population. Therefore, parkland standards and policies should also encompass both local and regional

perspectives. There is a broad and unquestionable consensus for a regional-scale park and shoreline trail on the site. There is less definite data on the exact size of such facility. However, a new park incorporating the already-proposed North Waterfront Park could easily fulfill the East Bay Regional Parks District criteria for a Regional Shoreline and Regional Recreation Area: 100 or more acres, capable of both intensive public use and preservation of significant environmental features, etc. (see EBRPD Existing Facilities for complete list of standards and guidelines).

Sports Facilities. By some assessments, outdoor sports and games have the highest annual demand of all outdoor recreational activities. Considering that the City of Berkeley is notably deficient in playing fields, it is recommended that the study site provide opportunities for both structured playing fields and open meadows suitable for informal games. At minimum the Parks and Recreation Commission requests a 25-acre lighted outdoor sports complex, in addition to an appropriate component of informal fields and meadows.

Environmental Preserves. The only potentially sensitive environmental areas which have been identified on the Berkeley site are the mudflats at Brickyard Cove and the stream outlets. The mudflats have been consistently mentioned for possible enhancement as marshland wildlife habitat and the stream outlets are specifically recommended for enhancement by the Parks and Recreation Commission. These should be considered as "givens" for the purpose of planning, subject to further evaluation of feasibility and cost implications.

Boating/Marina Facilities. The need for such facilities as launching areas, temporary moorings, and marinas is growing with boat ownership in the Bay Area, at a rate three times as fast as population increase. There are long waiting lists at existing facilities, including the Berkeley Marina. To the extent appropriate and feasible, these kinds of facilities should be a part of proposals for the study site.

Visual/Scenic Activities. The State Department of Parks and Recreation emphasizes the scenic value of the site, and recommends incorporation of viewing areas on the Brickyard Spit, Ashby Spit, and at the tip of North Waterfront Park.

The Coastal Conservancy did an independent view study of the site, which is detailed in the Visual Setting elsewhere in this report. Relevant at this point are their recommendations for view corridors corresponding to University Avenue and other streets east of the freeway, and their emphasis on maintaining significant views from the freeway and from the hills. These objectives will be translated into more specific requirements in the Evaluation Criteria.

Social/Educational Activities. The most frequently recurring suggestion in this category is some sort of interpretive center as part of a Brickyard Cove nature preserve. Other social/cultural activities frequently mentioned as

desirable for the site include a public conference center, an outdoor theater, and a public marketplace. Other potential uses of this sort, suggested in community proposals, are listed in the final section of this analysis.

Fishing/Beach Activities. This category includes not only fishing and swimming, but a wide variety of other activities: windsurfing, sunbathing, jogging, strolling, beach games, etc. According to East Bay Regional Park user studies, these are among the most popular recreational activities (see detailed description in later section of this analysis). As such, they should be incorporated to the maximum extent feasible within any proposal for the study site, subject to include environmental, design, and cost considerations.

Overnight Lodging/Camping. The State Parks Department addresses the need for this category of facilities in its proposal for the site, recommending that 50 to 100 individual sites (up to 25 acres) and 15 acres of group camping be located on the North Waterfront Park, and that a hostel complex (30 to 100 overnight visitors), a conference center (seating capacity 3,000 and overnight accommodations for 700) be accommodated on the Meadow.

These proposals are a useful indication of the size of facilities appropriated from the point of view of the State Department of Parks and Recreation. They may or may not be the location or size consistent with other aspects of Berkeley's desired plan for the waterfront. These questions will be addressed in the subsequent Evaluation of Alternatives phase of the planning study.

HOUSING

The housing strategy for the Berkeley Waterfront Plan should respond directly to the City's current housing policies and programs, as discussed in the Housing section of this report and summarized below:

1. As one of the last major land reservoirs in Berkeley, the waterfront provides an opportunity to plan a significant number of dwellings to serve the city's housing needs through the year 2000.
2. Development on the waterfront creates the opportunity to increase housing production in Berkeley to serve the needs of all segments of the population. In addition, there will be opportunities to provide housing for those with special shelter needs, including families, blacks, the elderly, the disabled and those with low or moderate income. New housing could be built on the waterfront, in existing neighborhoods, or in a combination of the two.
3. Development on the waterfront creates the opportunity to enhance neighborhood preservation policies of the city's Housing Element and Housing Action Strategy. This can take the form of contributions to rehabilitation programs, rental assistance programs, home ownership programs and reactivation of vacant units.
4. The provision of housing on the waterfront in combination with other land uses can bring about a balance of jobs and housing, reducing the potential for gentrification, traffic congestion, energy consumption and associated environmental impacts.
5. The waterfront can provide housing that meets both the need and demand for housing in Berkeley.
6. The size of the waterfront provides an opportunity to reach a "critical mass" of housing such that a true neighborhood could be established.
7. The inclusion of housing on the waterfront can assure an active, 24-hour environment.

However, there are a number of physical constraints to housing development, more fully discussed in the environmental section of this report, and summarized below:

1. Noise and air pollution constrain the location of housing adjacent to the freeway.
2. Soil conditions constrain the location of housing along many areas of the waterfront unless expensive foundation work is undertaken.

3. The cost of construction on unstable soils could limit housing to middle and high-rise buildings priced out of reach of those most in need of housing.
4. Methane gas odors could constrain housing and other uses down wind of the dump site.
5. Strong winds constrain the siting of housing along the water's edge unless wind breaks or other mitigations are provided.

ECONOMIC DEVELOPMENT OPPORTUNITIES

There are few hard constraints to economic development on the waterfront. Rather, the constraints arise from the tradeoffs between the positive benefits of development, such as jobs and revenues, and other interrelated factors: market demand, type and intensity of development, economic and engineering feasibility, and especially the policy priorities the City chooses to emphasize. The following section will summarize economic development opportunities and constraints under three headings: Employment, Market/Financial, and Fiscal considerations.

EMPLOYMENT

Waterfront development offers the opportunity to inject new vitality into the economy of the city while providing job opportunities with growth potential as well as jobs for those with limited education or training. There are opportunities for major commercial development, construction, joint public/private development, and programs for minority participation in entrepreneurial activities. Many goals and objectives of Berkeley's economic development plan can be implemented concurrent with waterfront development.

1. The waterfront could provide a wide array of job opportunities for the residents of Berkeley, reducing the need for residents to commute out of the city.
2. The waterfront offers the opportunity to broaden the employment base of the city.
3. Profitable development such as offices on the waterfront can generate surplus that can be used for job training and other employment programs.
4. Employment associated with retail and commercial recreation on the waterfront could provide jobs for low-skilled residents and displaced workers.

Potential constraints to economic development are discussed in other sections of this report, and include the following:

1. Traffic congestion on the freeway constrains the amount of employment that can be supported on the waterfront.
2. Industrial uses on the waterfront are constrained by the difficulty of access, the absence of land suitable for one-story plants and surface parking, the limits of sewer and water utilities, and the presence of sensitive environmental conditions.
3. The growth of employment in San Francisco, Contra Costa County and south Alameda County represent the major potential competition to the development of the waterfront as a regional office center.

MARKET/FINANCIAL CONSIDERATIONS

The site represents a unique economic opportunity because of its strategic regional location, with access to a large amount of the East Bay population and proximity to San Francisco. Its primary economic attribute is its ability to serve a growing market of more than one million persons with activities such as commercial office, hotel and related services, and residential.

Residential

Opportunities for market rate housing are significant. The primary market consists of households who would otherwise choose to live in Alameda County or Western Contra Costa County. There is a secondary market consisting of households who would otherwise locate in San Francisco or Central Contra Costa County.

The primary market area will experience substantial growth in population and employment, which will provide opportunities for new housing on the waterfront.

A constraint on the potential residential market at the site is the cost of new housing. Because of site conditions and other constraints, the cost of building new housing may command a premium over that charged by the competitive housing units in the East Bay. The higher the cost of new housing at the site, the thinner the potential market for such units.

There is a market in the East Bay, composed largely of established households who choose for a variety of reasons to move within the market area, and who have the money and income to afford new housing. In the primary market area, these are approximately 6,000 such households annually, 4,000 new owner-occupied and 2,000 market rate rental. There is already competition for this relatively small market from existing developments in Alameda, Emeryville and

Richmond. Also, if the Mission Bay and Rincon Hill developments in San Francisco are built as planned, they could compete with residential development at the Berkeley waterfront.

There is the opportunity to develop a residential community at the site. An absorption of 5 percent of the East Bay demand might be feasible if the unit cost can be kept reasonable.

The constraint on the residential market is that costs may be too high in relation to amenity and value to deter absorption of a significant enough number of units to be feasible. An additional constraint to developing new rental housing is Berkeley's rent control.

Retail

Because it is Berkeley's policy to concentrate general retail in the Downtown, the types of retail considered as opportunities for the Waterfront are: 1) specialty retail, and 2) possible support commercial for other on-site uses.

Internally-Supported retail/commercial depends chiefly on other uses on site or in the immediate vicinity for its clientele. For example, 100,000 square feet of office space would provide a market for approximately 1,000-2,000 square feet of support commercial such as food establishments, drugs store, barber, tobacco shop, stationery store, and printing shop. A residential development of 1,000 housing units would generate demand for a small convenience shopping center of approximately 15,000 square feet, 80 percent of which would be a supermarket, and the remainder several specialty stores.

Externally-supported specialty retail depends on a clientele from a larger market area, and this competes with other facilities in the East Bay. However, the Berkeley site appears to be well located with respect to a relatively underserved market area between Hayward and Richmond. Considering the amenities of the waterfront location, the site provides a prime opportunity for a complex to include waterfront-related retail, restaurants, and specialty shops. Size has yet to be determined, but analogous developments in the Bay Area include Jack London Village in Oakland, at 65,000 s.f., and Larkspur Landing adjacent to the Ferry Terminal, at 175,000 s.f.

Conference Center

There appears to be a market for a small scale conference and exhibition center on the order to 50,000-70,000 s.f., analogous to the conference center in Monterey. The market is chiefly education and business-related events generated by the University of California, its associated centers and affiliates, and area colleges and businesses. The opportunity is substantiated by the shortage of first-class conference facilities in the area, and the special attraction of the Berkeley Waterfront site. It is important to recognize the

sybiotic relationship between hotels and conference centers, i.e., the presence of a conference center stimulates hotel occupancy and the presence of hotel rooms enhances the success of a conference center.

Office Space

The East Bay will experience substantial growth in white collar employment, which will, in turn, lead to increased demand for office space. In the primary market area (Alameda County), the office space demand by the year 2000 will total 23,562,000 square feet.

The site is attractive to firms who desire to locate in Alameda County or Western Contra Costa County. In addition, it would be attractive to some firms who would ordinarily be attracted to Central Contra Costa or San Francisco. The latter depends on relative prices of office space, and on incipient development controls on office space growth in San Francisco and Central Contra Costa and Southern Alameda Counties.

Given a competitive rent structure, the Berkeley waterfront site would be able to absorb up to 10 percent of the East Bay's growth in a new office space, i.e., up to 2.35 million square feet.

Hotel/Motel Space.

Demand for accommodations in the East Bay will grow as the economy and population continue to grow. The lodging market in the East Bay after 1985 will be on the order of 225 rooms per year. Current plans for new hotels and additions in the East Bay will satisfy that demand for the immediate future (1985 through 1988). After that, the East Bay market should be able to accommodate 600 to 700 new rooms at the waterfront site beginning 1990 to 2000.

High Tech Uses

Proximity to the University of California and major business centers makes the site ideal for certain kinds of office tenants with businesses geared to high technology. Engineering firms, testing laboratories, computer software, developers, specialized "think tanks" and other such organizations would find the ambience of a waterfront site attractive.

The site is not ideally suited for high-tech manufacture, such as electronic components or computers. There are many alternative sites for that kind of activity. However, the intellectual parts of high-tech research and development could be well suited to the site. These are specialized kinds of office space that have more in common with white collar employment than with manufacturing.

FISCAL CONSIDERATIONS

Fiscal information at this early stage is limited to a description of the current categories of city costs and revenues, and of the thresholds for required service expansion likely to be encountered if the site is developed. As described in the last section of this report, potential costs to the City include utility, street, and infrastructure maintenance, police and fire protection, increased administrative costs, and landscaping and parks maintenance/operations costs. Principal sources of revenue include property taxes, business license fees, sales taxes, and hotel occupancy tax.

Revenues

On a square foot basis, hotel use is the most lucrative source of revenue to the City - over \$5,000 per 1,000 square feet. Next is retail, at \$2,415 per 1,000 square feet. Office generates \$955 per 1,000 square feet, and residential \$715 per 1,000 square feet.

Costs

The Waterfront lands will probably require substantial expenditure for both capital improvements and maintenance/operating costs. Some of these costs will be the same regardless of what uses are planned; others will vary by use and quantity of development. More description of costs will be prepared during the Refinement of Alternatives phase. Typically, the surplus of revenue over costs is highest for hotel development and lowest for parkland, with other uses falling generally in the order given above.

Potential Net Revenues

The major conclusion to be drawn at this point is that the waterfront lands represent a great opportunity for the City to provide a balance between land uses requiring city financial support and those that generate more income than cost.

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I. Land Use and Planning Context

ROMA

BERKELEY WATERFRONT PLAN

LAND USE AND PLANNING CONTEXT

Prepared by ROMA Design Group

January 22, 1985

LAND USE AND PLANNING CONTEXT

EXISTING LAND USE AND POLICY SETTING

SITE DESCRIPTION

Site Boundaries and Acreage.

Berkeley's waterfront lands are separated from the rest of the city by the Interstate 80 Highway. They are accessible by only three east-west streets: Gilman, University and Ashby, from north to south, respectively. University and Ashby are the two primary east-west traffic arteries through Berkeley; University, in particular, represents a major symbolic and functional axis of the city, running from the University of California and downtown all the way to the Bay.

The total dry land acreage of the site is approximately 170 acres, as illustrated in Figure 1. The study area consists of the privately-held lands between the West Frontage Road and the Berkeley Marina. Publicly-owned lands adjacent to the site include the land around the Marina (68 acres) and the North Waterfront Park (90 acres), as well as several street rights-of-way maintained through the private holdings. In addition to the above dry land acreage, approximately 505 acres of wetlands are held in public trust by the private owner, Santa Fe Land Improvement Company (see Table 1).

Site Characteristics.

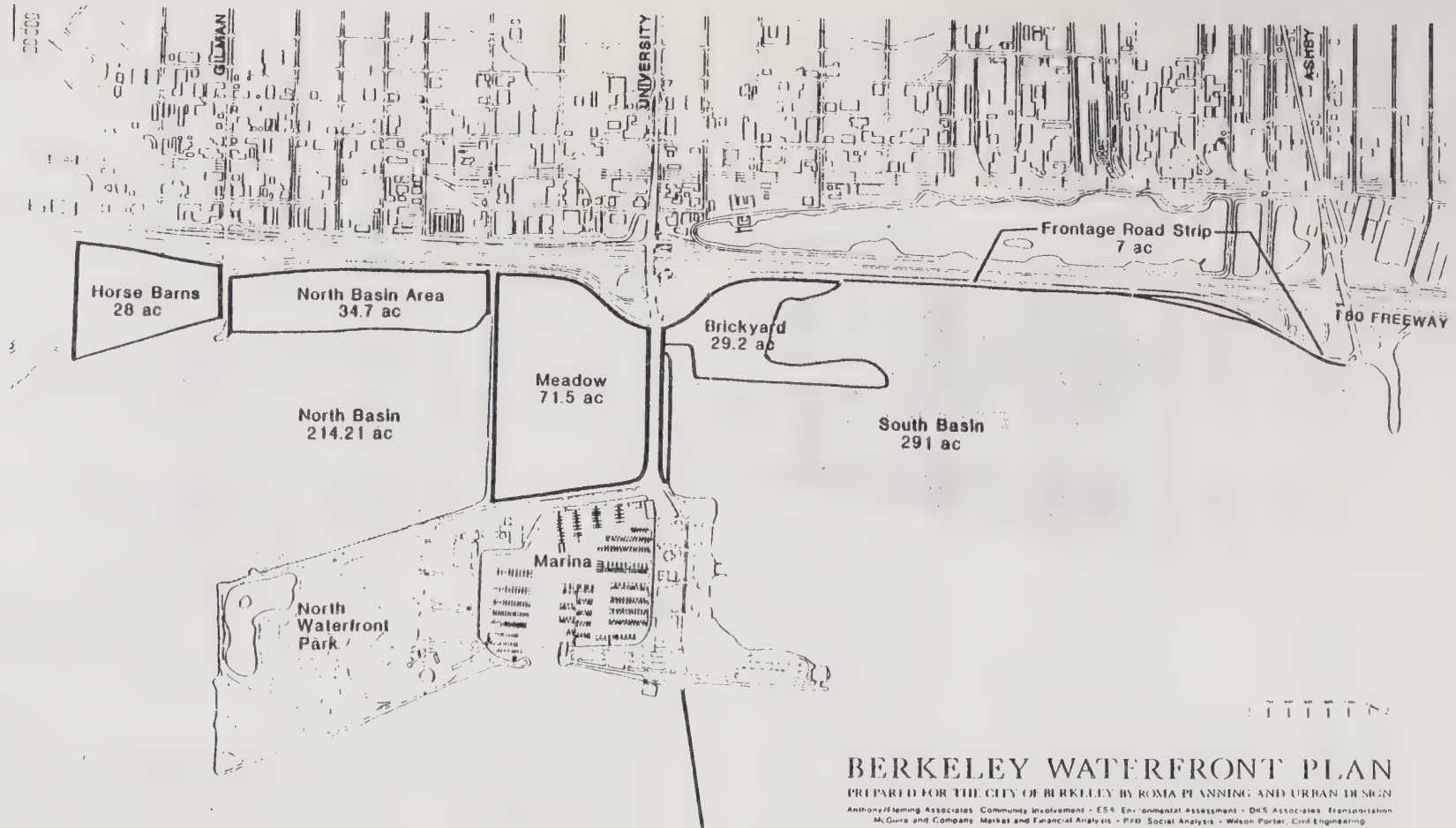
The site can be understood as a number of functional areas, differing in environmental characteristics, orientation, and access. Except as specifically mentioned below, all of the land is undeveloped.

The Water Bodies surrounding the site are called the North and South Sailing Basins. The North Basin is enclosed by land on three sides, and is as little as four to five feet deep at low tide. Largely because of being so protected from wave action, it is subject to siltation.

The South Basin is defined by the land forms of Shorebird Park and the Brickyard Spit. This area is partially shielded from the predominantly south-west wave action. It is a very popular location for windsurfers.

Between the Spit and the Frontage Road is Brickyard Cove, a small inlet that becomes exposed mudflats at low tide.

The Meadow is by far the largest land mass, consisting of 72 acres just north of University Avenue. With a north-south dimension of 1,600 feet, most of it is land-locked; only the edge zones have a strong connection with the water.



BERKELEY WATERFRONT PLAN

PREPARED FOR THE CITY OF BERKELEY BY ROMA PLANNING AND URBAN DESIGN

Anthony/J Planning Associates Community Involvement - ES4 Environmental Assessment - D&S Associates Transportation
McGuire and Company Market and Financial Analysis - P&D Social Analysis - Wilson Porter, Civil Engineering

Figure I-1
Acreage of Site Subareas

Table 1

SITE ACREAGE BY SUBAREA

	Existing Acreage *
<u>Privately-Owned Land</u>	
Upland	
Meadow	71.5
Horse Barn	28.0
North Basin	34.7
Brickyard	29.2
Frontage Road Strip	7.0
TOTAL	170.4
Submerged	
North Basin	214.21
South Basin	291.00
Out Parcels	?
<hr/>	
City-Owned Land	
North Waterfront Park	90.00
Marina Edge	68.00
Marina Harbor	45.00
City Streets in Meadow Area	<u>5.13</u>
TOTAL	203.00

*Mean Lower Low Water datum, before Caltrans proposed freeway improvements.

The North Basin Area is a 400 to 600-foot wide strip of land between the Frontage Road and the North Sailing Basin. Approximately the northern two-thirds (24 acres) is currently leased to Golden Gate Fields Racetrack for overflow parking.

The Horse Barn Area is located between Gilman and the Albany border. These barns serve Golden Gate Fields; this and the overflow parking area are leased until 1997 to the Pacific Racing Association.

The Brickyard is south of University Avenue. The spit extending from it offers some of the best unobstructed views of the Bay.

The Freeway Strip south of the Brickyard ranges in width from 10 to 100 feet. Presently, it serves as little more than a strip of riprap shielding the shore from wave action, and as a location for tailgate fishing and jogging along the West Frontage Road.

EXISTING LAND USE

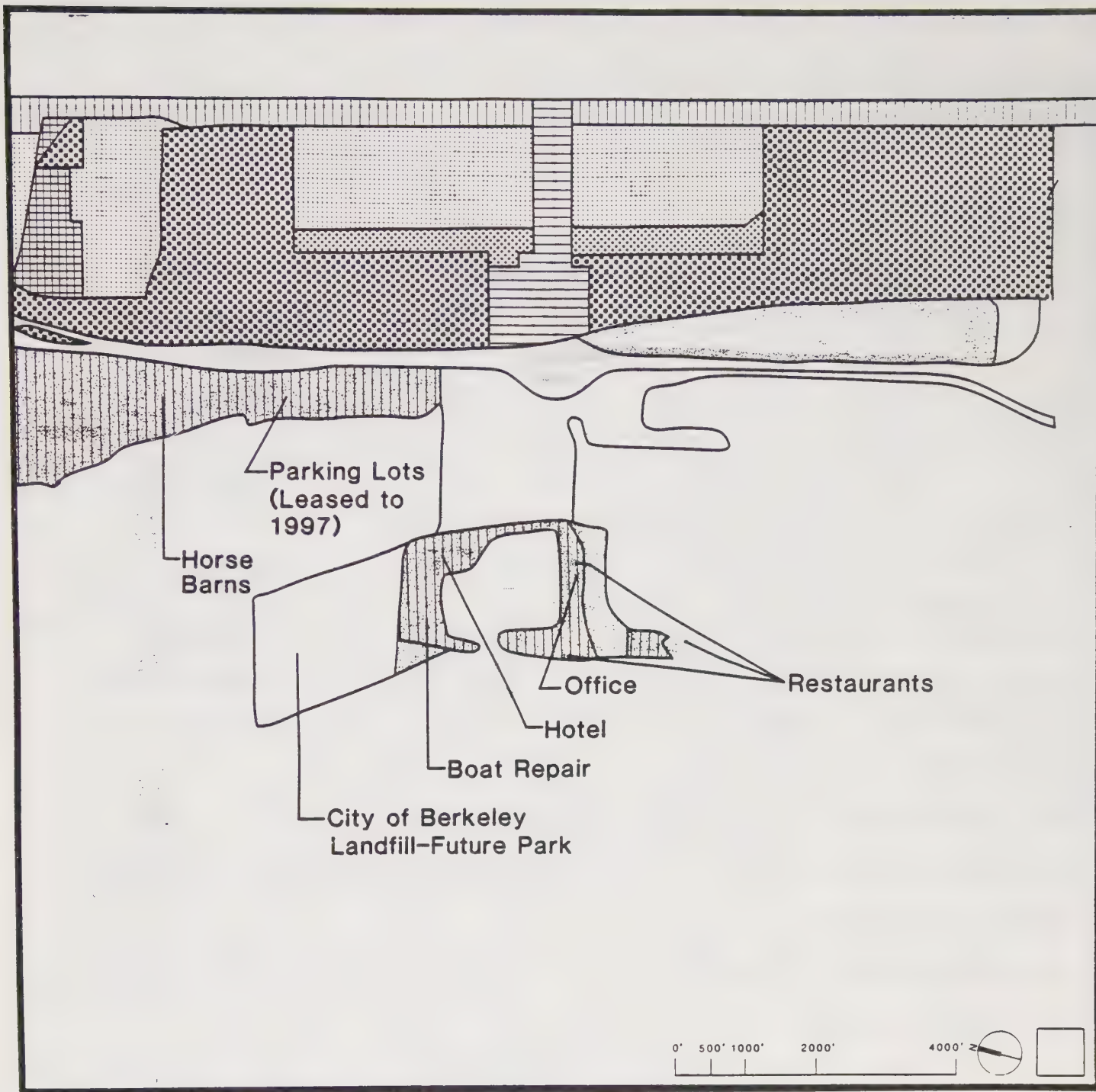
Publicly-owned lands.

The Marina area accommodates a number of commercial/recreational activities. The 90-acre North Waterfront Park is currently under construction on sanitary landfill north of the Marina. It is eventually planned for biking and bike trails, picnic and camping areas, and play fields. No structures except a park headquarters and restrooms are planned (see Figure 3). The eventual cost of the park is estimated at \$10 million, although only \$1.3 million has been committed to date. The sources of this funding are as follows:

Land and Water Conservation Fund:	\$580,000
Marina Operating Funds:	250,000
Coastal Conservancy:	460,000

Other public recreational facilities include the 1,000-berth Marina Harbor, the six-acre Shorebird Park and three-acre Horseshoe Park, and the Berkeley Fishing Pier. Private recreational facilities include three sailing clubs, and commercial recreation includes the Marriott Hotel, three restaurants, a sports center, boat repair yard, and a small office building. All of these are leased concessions on city-owned lands; terms of the leases are given in Table 2. Because existing buildings cover less than 15 of the total 68 acres surrounding the Marina, there is substantial additional development potential in this area.









Immediately across the freeway is Aquatic Park, a 60-acre public lake and surrounding city park. It is a salt water body having tidal interchange with the Bay through controlled gates under the freeway. Improvements are badly needed at the park to restore water quality and landscaping.



EXISTING LAND USE

Figure I-2

Legend

	Vacant		Institutional		Recreational/Open Space
	Residential		Residential/Industrial		Recreational/Commercial
	Commercial		Industrial		

BERKELEY WATERFRONT PLAN

ROMA
Planning and Urban Design

Anthony/Fleming Associates
Community Involvement

ESA
Environmental Assessment

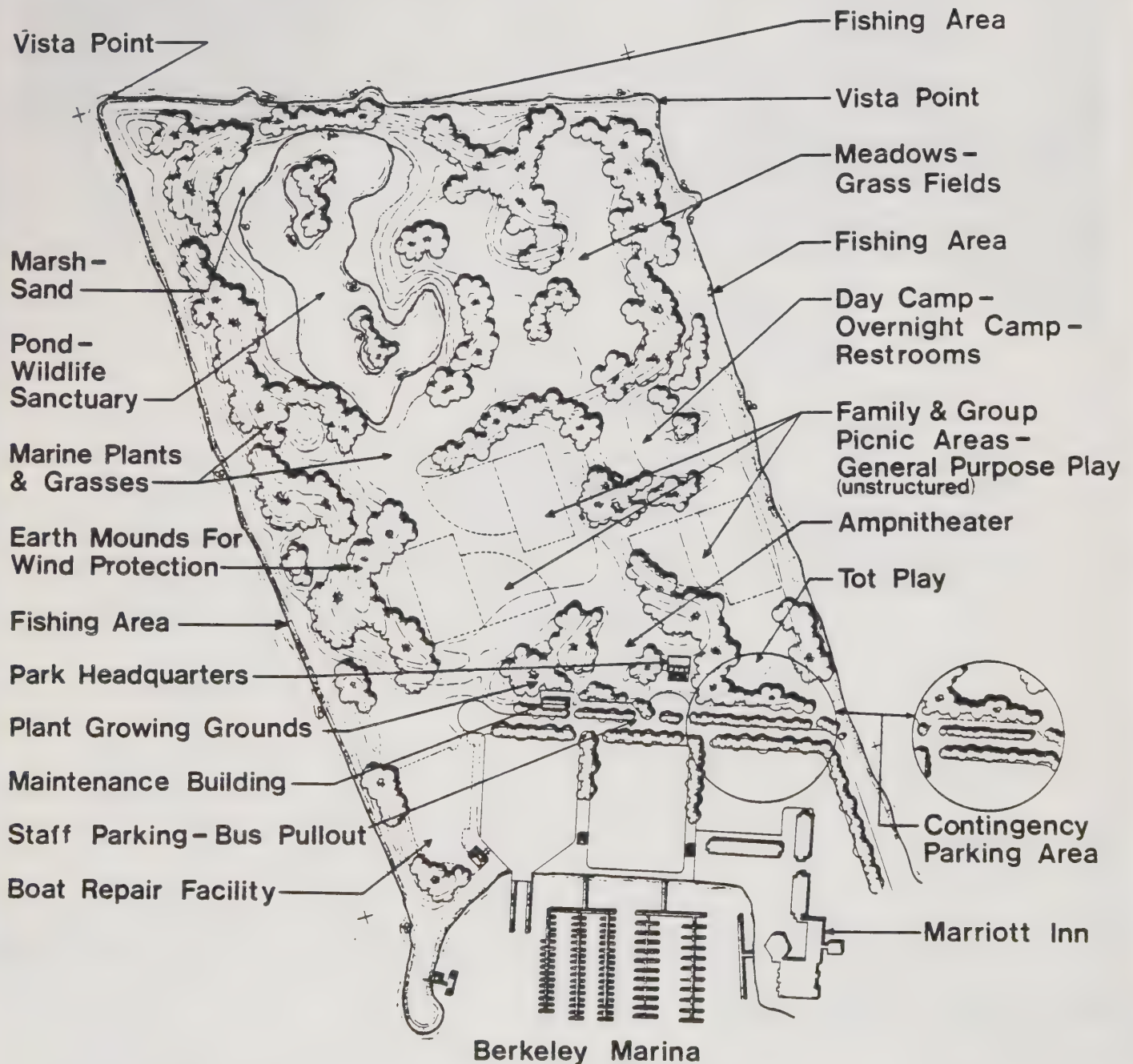
OKS Associates
Transportation

McGuire and Company
Market and Fiscal Analysis

PAD
Social Analysis

Wilson-Porter
Civil Engineering

BERKELEY NORTH WATERFRONT PARK



LAND USE PLAN

NORTH WATERFRONT PARK

RECREATION AND PARKS COMMUNITY SERVICES
CITY OF BERKELEY, CALIFORNIA

Adopted June 1977. Changes have been made pursuant to further feasibility studies.

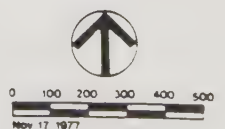


Table 2.

BERKELEY MARINA CONCESSIONS:

<u>LESSEE</u>	<u>EFFECTIVE DATE OF LEASE*</u>	<u>TERM OF LEASE*</u>
Akol-Lee Building	July 1968	45 years
Berkeley Marina Sports Center (Bait & Tackle Shop)	December, 1974	50 years
Dock of the Bay Restaurant	November, 1974	50 years
Berkeley Marina Center	May, 1978	50 years
Berkeley Yacht Club	December, 1966	25 years (option to renew)
Cal Sailing Club	December, 1973 (amended July, 1981)	mo. to mo. 2 years
U.C. Intramural Recreational Sports	July, 1981	2 years
Harbor Carriers/Harbor Tours	October, 1980	2 years
Hs Lordships Restaurant	March, 1965	50 years
Marriott Inn	September, 1969	62 years
Solomon Grundy	March, 1967	50 years
Harry Stylos	January, 1977	mo. to mo.

*These are unofficial dates; information from Marina Administration records. The City Clerk's Office has official copies of Marina Lease Agreements; these can be examined for official data.

TOTAL CONCESSION REVENUES:FY 1980-81

\$383,069

FY 1981-82

\$420,685

Funds generated from Marina concessions stay in the Marina for expenditures related to the operations there (including loan repayment). However, the bed tax at the Marriott Inn flows to the General Fund of the city. For details on this, contact the city's Finance Department.

Neighborhoods East of the Freeway.

Berkeley. Except for Aquatic Park, the area between Fourth Street and the freeway is mainly industrial, a land use pattern that began when that area was the original shoreline, a good location for factories needing adjacent rail and water access. This strip of existing industrial uses, combined with the rail and freeway corridors, create a continuous barrier between the residential neighborhoods of the city and the waterfront.

There is an active commercial area developing along Fourth Street with numerous restaurants, retail stores and offices, many of which are home-improvement and crafts-related uses. East of Fourth Street is a mixture of commercial and residential uses.

Albany. The lands immediately north of the study site in Albany are leased to Golden Gate Fields until 1997. Still further north are the Albany Mudflats, 160 acres of habitat for shorebirds and waterfowl. On the east side of the freeway in Albany, there is a swath of industrial uses and several residential neighborhoods, including the Gateview housing project at the foot of Albany Hill.

Recent and Proposed Projects.

The following is a list of recently constructed and proposed major private projects, both at the waterfront and elsewhere:

<u>Project and Location</u>	<u>Size (sq. ft.)</u>	<u>Current Status</u>
Center Street Complex	250-room hotel and office/conf.	Plans approved
Office Buildings:		
2145 Milvia	32,000	Completed
2310 Fulton at Durant	90,000, 6-story office/retail	Plans submitted
Milvia and Addison	7-story office	Completed
2150 Kitteridge	21,000 - Office/Retail	Under construction
"Armory"	27,000 - Office	Completed
Golden Bear Ford site	100,000 - Office 40,000 - Retail 45,000 - YMCA	Plans submitted
University at Shattuck	6-story office/retail	Completed
Marriott Inn Expansion, Berkeley Marina	150 rooms	Conceptual
Holiday Inn Expansion, Emeryville	200 rooms	Conceptual
Gateview Phase II, Albany	69 units	Completed
Gateview Phase III, Albany	331 units	Approved

EXISTING POLICY

(Update of Environmental Reconnaissance, November 22, 1982)

City of Berkeley.

General Plan. The 1977 Master Plan of the City of Berkeley does not indicate any significant change from present use patterns for the west district of the city. San Pablo Avenue and University Avenue will remain community commercial corridors, and the residential neighborhood density is set at 31 to 50 dwelling units per acre (see Figure 4). West Berkeley will remain the primary manufacturing/light industrial district of the city.

Land uses proposed for the area west of Interstate 80 reflect the present use patterns, including the plans for reclaiming the sanitary landfill as a park. The Santa Fe properties are simply designated "for further study"; however, general principles for guiding the future development of the waterfront are stated. Those policies have been updated in Phase I of the Waterfront Planning Process (January 1984).

Relevant portions of the Transportation Element include the designation of University and Interstate 80 as scenic routes, and the long-term plan for a shoreline bicycle route from Albany to Emeryville, with major east-west links at Gilman, University, and Ashby.

Zoning. Land use classifications, height and coverage limits, and parking regulations are illustrated in the Zoning Map (Figure 5) and the table on the following pages.

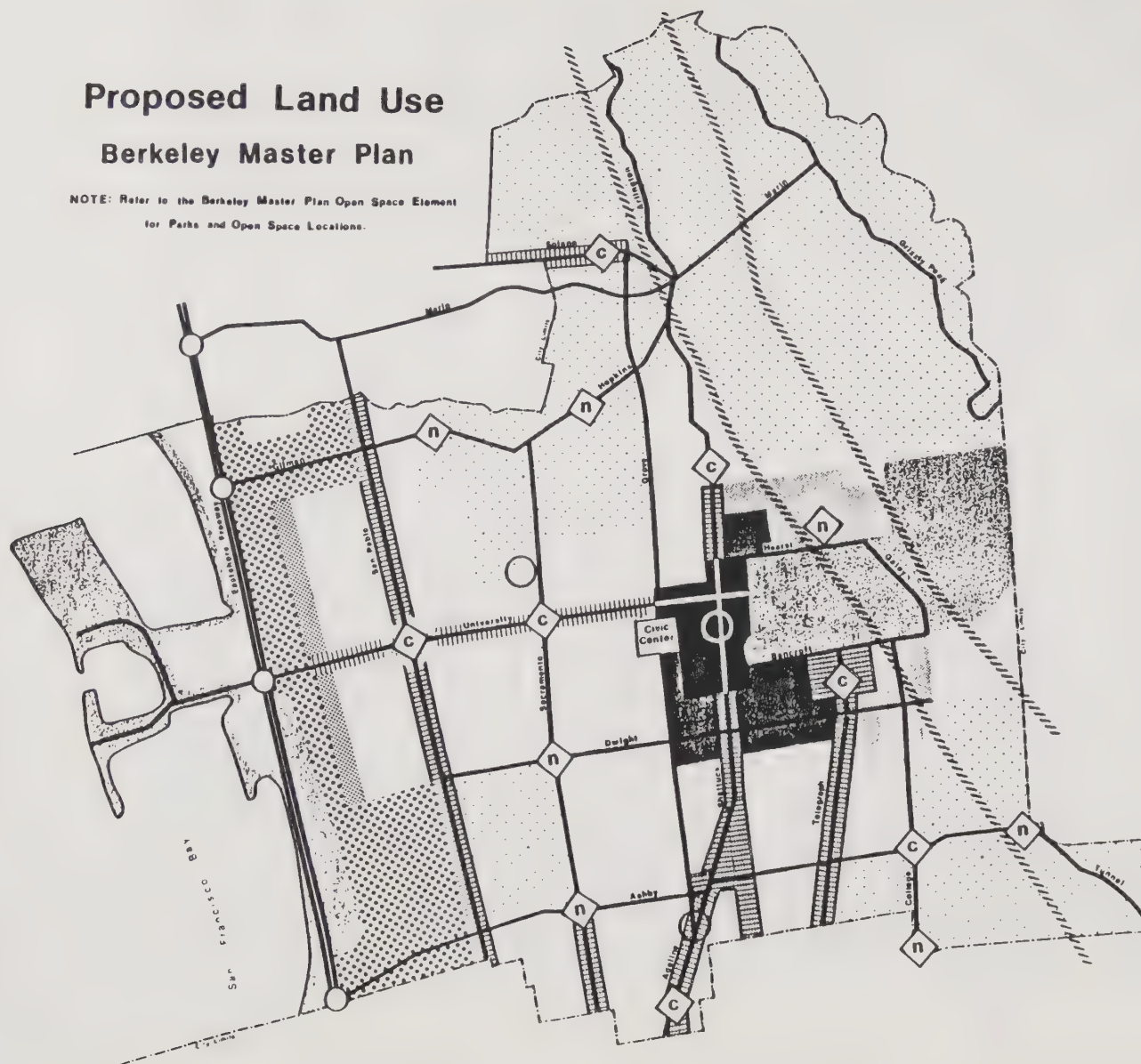
West Berkeley Redevelopment Project. The City of Berkeley has designated a 15-block area just east of the freeway and north of University as a redevelopment area. The original proposal was for the redevelopment of a clean industrial park, a means to revitalize the area while broadening the tax base. Citizen opposition to the eventual eviction of residents of the area led through a series of events to amendments to the original proposal.

The current Redevelopment Project land use map is shown in Figure 6. It provides for six zones, with the following recommended uses:

- A. Offices, laboratories, service, repair, and rental outlets.
- B. Uses under "A" plus visitor-oriented commercial.
- C. Warehousing and distribution, laboratories, manufacturing, and service, repair, and rental outlets.
- D. R1A uses plus home offices, artisans, accessory retail sales.
- E. Uses under "B" plus R3 uses, joint live/work quarters, home offices, artisans, accessory retail sales.
- A-1. Uses under "A" plus R2A, joint live/work quarters, home offices, artisans, and accessory retail sales.

Proposed Land Use Berkeley Master Plan

NOTE: Refer to the Berkeley Master Plan Open Space Element
for Parks and Open Space Locations.



Legend

- 0-30 Persons per Residential Acre
- 31-50 Persons per Residential Acre
- 51-70 Persons per Residential Acre
- 71-120 Persons per Residential Acre
- Central District
- Commercial Service District
- Commercial/Residential District
- Neighborhood Shopping District
- Community Shopping District
- Area for Future Study
- Industrial District
- Special Industrial District
- Recreation/Institutional
- Freeway and Interchange
- Thoroughfare
- B.A.R.T. Station
- Seismic Safety Study Boundary

SCALE IN FEET
0 2500 5000 7500

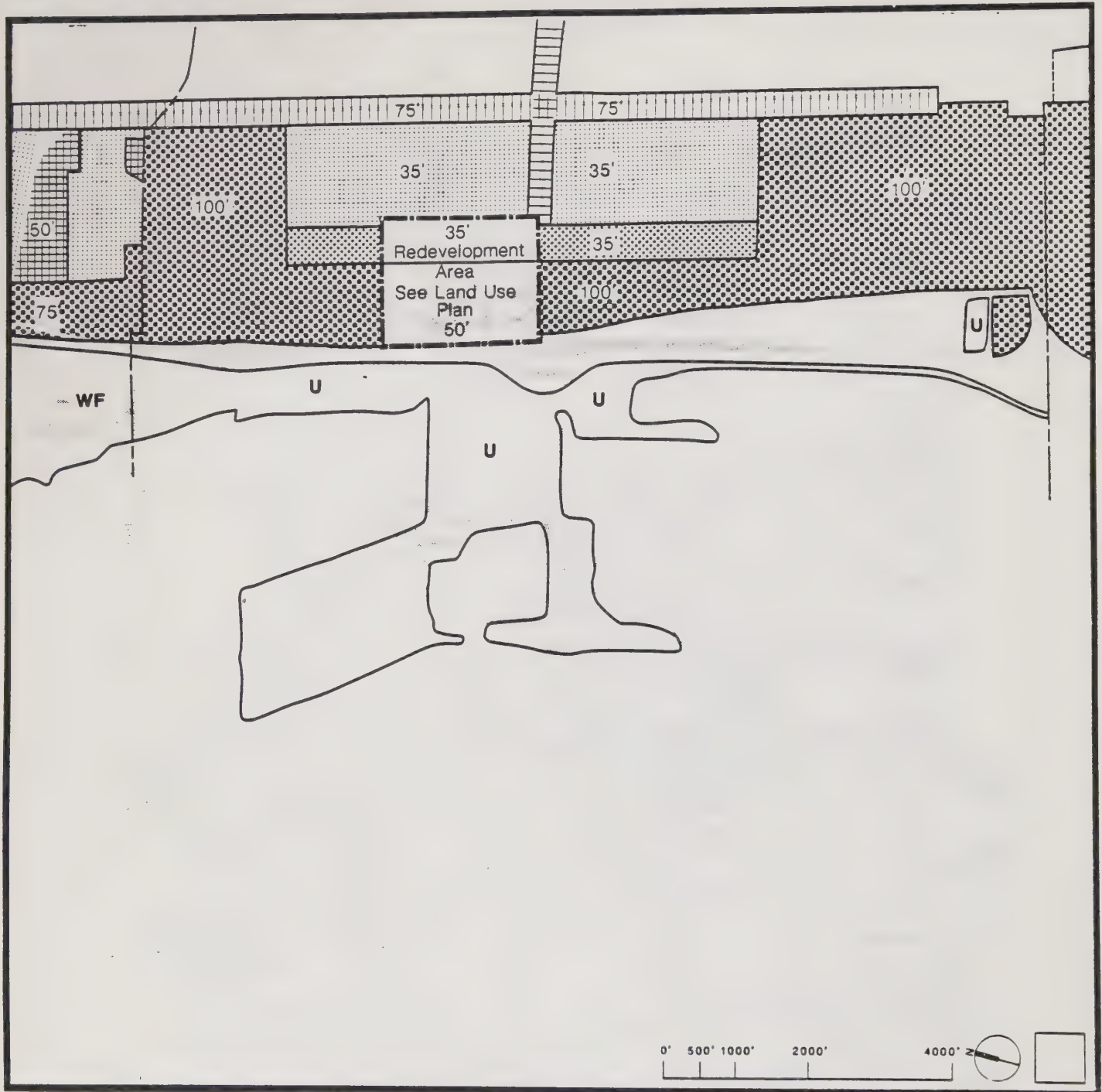


Prepared by the Comprehensive Planning Department, July, 1974

TABLE 3
EXCERPTS FROM CITY OF BERKELEY LAND USE CONTROLS

	Parking	Maximum Coverage	Height
General Provisions	Must be within 300' along public right-of-way from structure it is to serve (800' of all joint uses). Also, screening and loading requirements.		
Residential			
R-1, R-2	1 space/unit	@ 40%	35'
R-3, R-4	1 space/1000 sq. ft.	@ 45%	35'
R-5	1 space/1200 sq. ft.	@ 50%	35'
Hotels	1 space/3 rooms + 1 space/3 employees		
Motels	1 space/room + 1/manager		
Offices	When in an R district, 1/400 gsf (Board of Adjustments can reduce to 1/800 gsf for certain types of operations.		
Commercial (C-1)		Max. FAR=3	50' (75' with use permit)
Downtown (C-2)		Max. FAR=4 (6 with use permit)	100'
(C-3)		Max. FAR=4	75'
S-I (Special Industrial)	1/500 gsf + 1/400 retail gsf	Max. FAR=1	Equal to adjacent "R" district
M (Manufacturing)			8 stories or 100'

Source: Environmental Reconnaissance of the Berkeley Waterfront, compiled by Hall Goodhue Haisley and Barker



ZONING

Legend

	Residential		Special Industrial		Unclassified
	Commercial		Manufacturing	35'	Height Limit
	Public Facility		Waterfront		

Figure I-5

BERKELEY WATERFRONT PLAN

ROMA

Planning and Urban Design

Anthony/Fleming Associates

Community Involvement

ESA

Environmental Assessment

DKS Associates

Transportation

McGuire and Company

Market and Fiscal Analysis

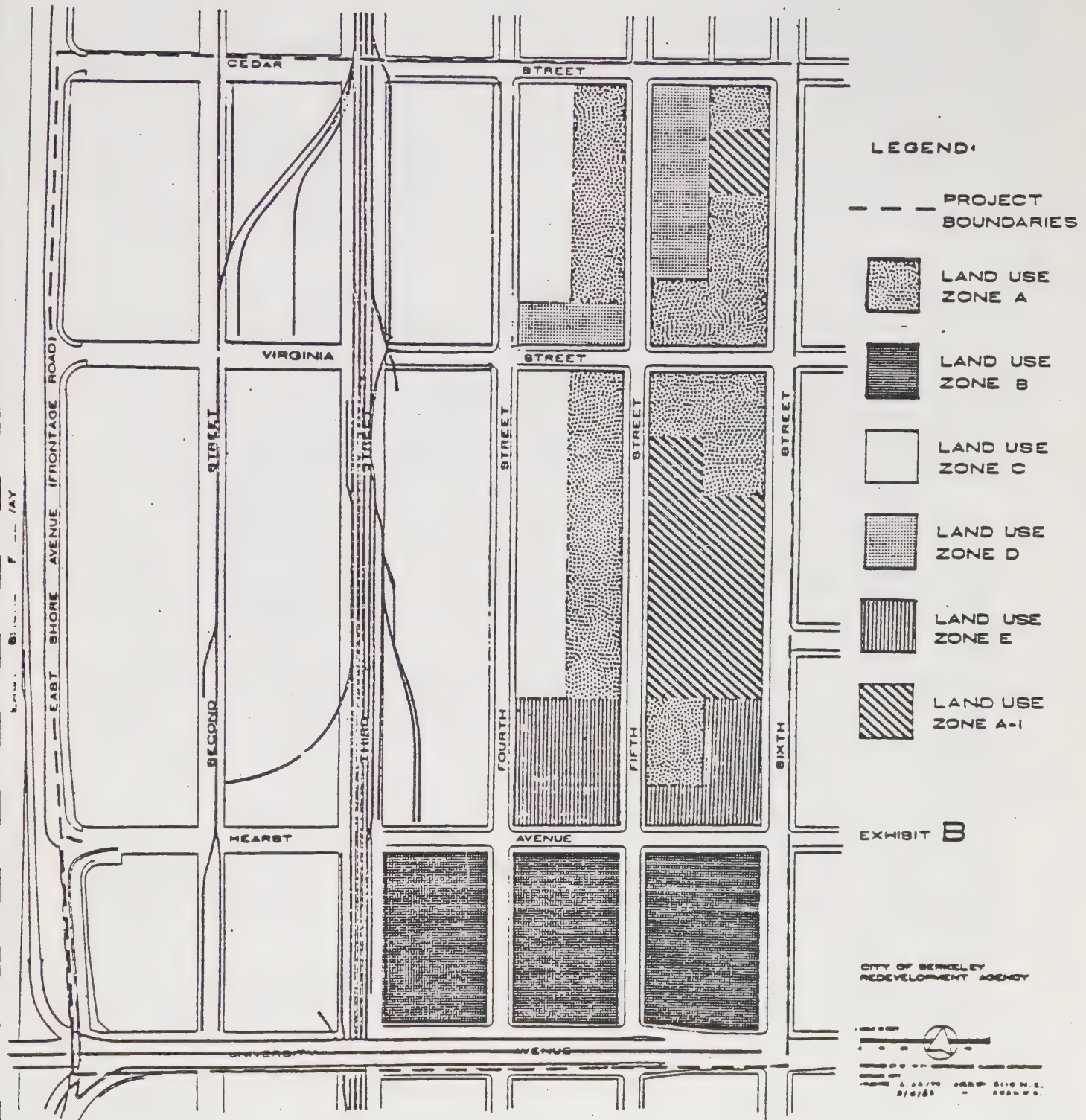
PAD

Social Analysis

Wilson-Porter

Civil Engineering

WEST BERKELEY REDEVELOPMENT PROJECT LAND USE PLAN MAP



The development standards for the Redevelopment Area can be summarized as follows:

Required Setback: 10 feet from street rights-of-way

Coverage: 25-70 percent

Maximum Height: 35 feet on Sixth Street, 50 feet elsewhere

Off-street parking requirements (number of spaces):

-Residential	same as City zoning (Table 3)
-Hotels/Motels	same as City zoning (Table 3)
-Offices	same as City zoning (Table 3)
-Retail	1/200 g.s.f.
-Restaurants, Bars, Nightclubs	1/2.5 seats or 1/40 s.f. of dining area
-Wholesale/Service Outlets	1/1,500 g.s.f. 1/company vehicle
-Warehouse/Distribution	1/2,000 g.s.f.
-Manufacturing	3/4 resident employees

The most recent project under the Redevelopment Plan was 62 units of Section 8 housing completed in late 1983 on a portion of the block bounded by Fifth, Sixth, Hearst, and Virginia Streets. The next project is the Delaware Street Historic District; it calls for residential/commercial reuse of the historic district in the center of the same block.

City of Emeryville.

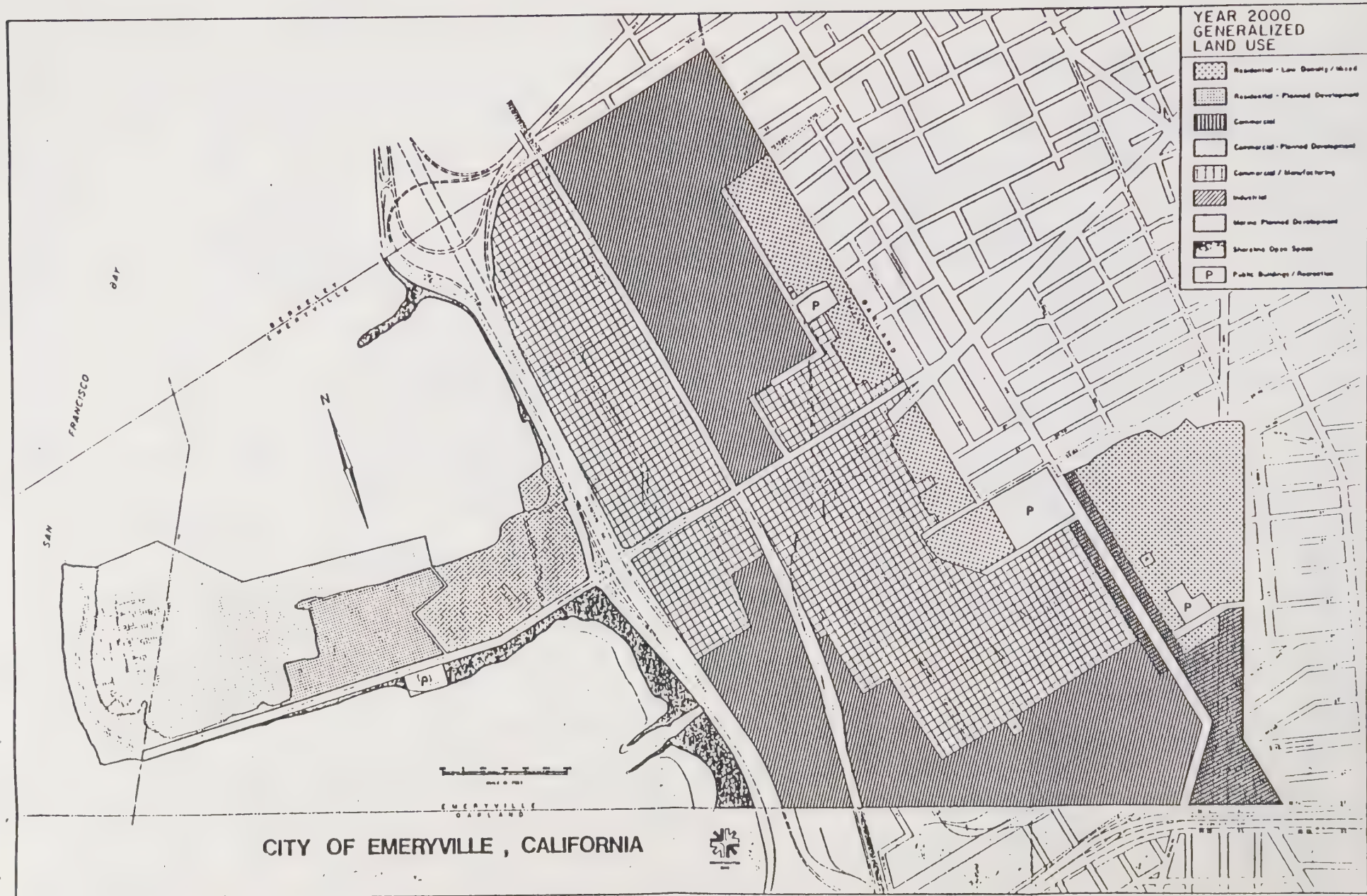
General Plan. The only portion of the Emeryville General Plan relevant to the study area properties is the provision for an open space easement along the shoreline from the Ashby Spit to the Emeryville Crescent (see Figure 7).

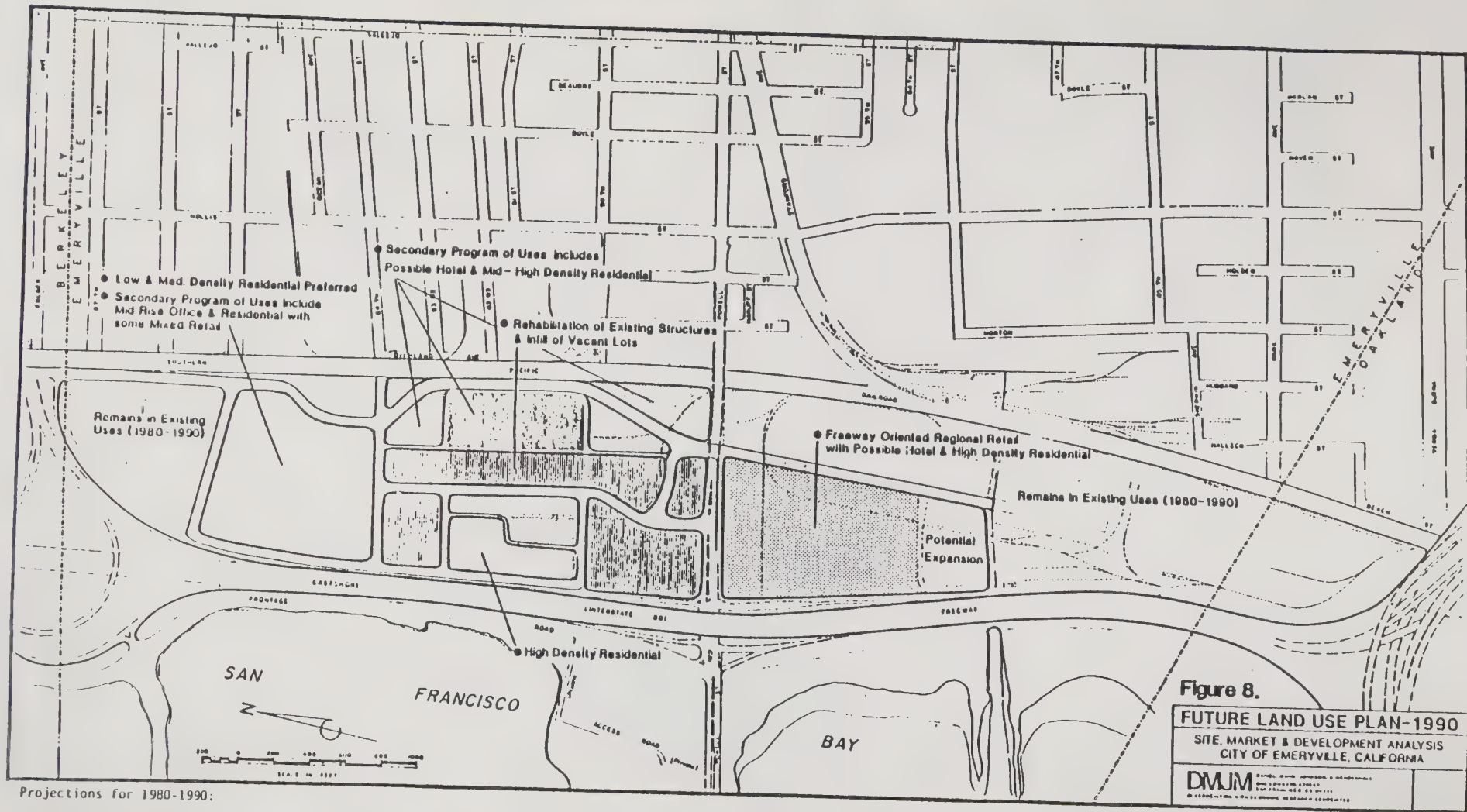
Emeryville Bayfront Development Plan. The City of Emeryville commissioned a study in 1980 of the underutilized industrial area immediately to the east of Interstate 80. The study projects that 93 acres out of the total 140 are susceptible to change, with probable uses to include residential, office, retail, and hotel (see Plan Map, Figure 8). The most recent construction under this plan was a 30-story, 580-unit residential tower.

City of Albany.

General Plan. Besides the City's "Waterfront Plan" on the Albany Peninsula, relevant portions of Albany's General Plan (Figure 9) include a shoreline trail easement, and recreational use of the 39-acre Golden Gate Fields north parcel presently used by Santa Fe.

Zoning. Land use classifications and height limits of zones adjacent to Berkeley are illustrated in the Zoning Map.





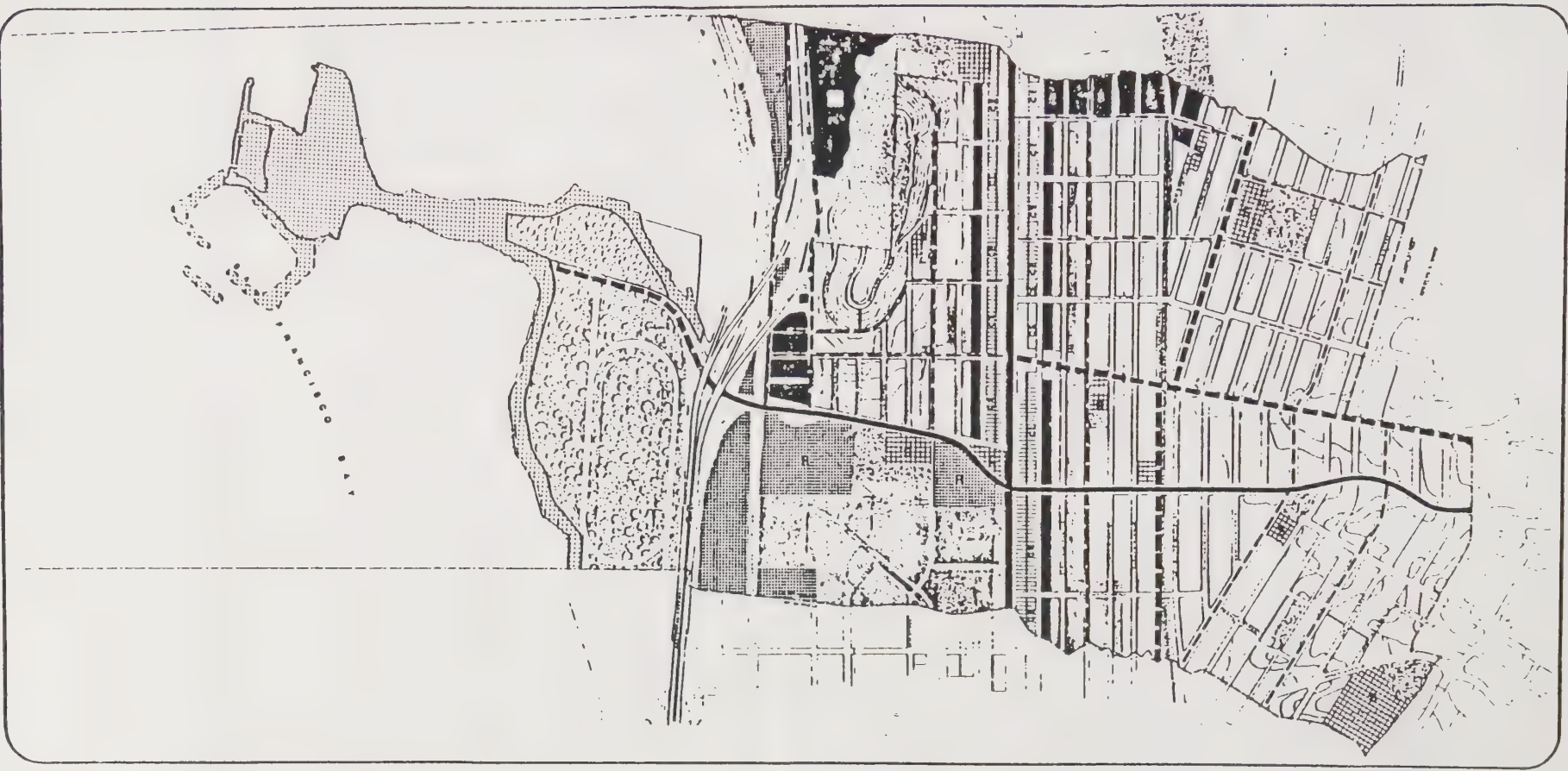
Projections for 1980-1990:

Residential highrise-	- 800-1,100 units
Residential low and midrise	- 800 units
Office low, midrise and rehabilitation	- 405,000 s.f.
Retail-regional	- 100-150,000 s.f.
Retail-specialty	- 80-100,000 s.f.
Retail-neighborhood convenience	- 20- 25,000 s.f.
Hotel - low or midrise	- 200-250 rooms

Legend

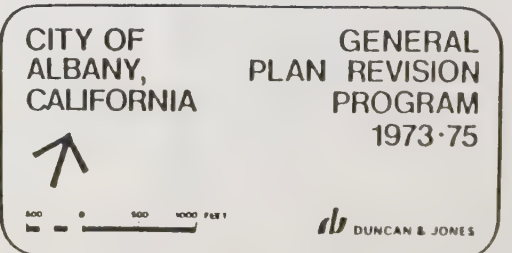
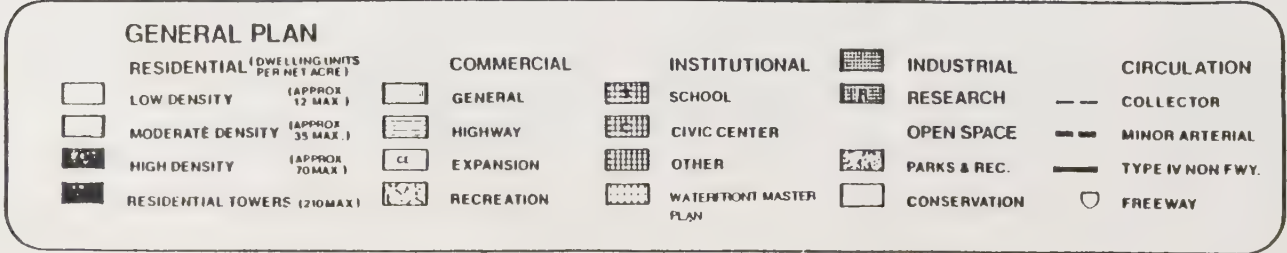
- Residential
- Office
- Specialty Retail
- Mixed Office & Convenience Retail
- Retail

Note:
Currently being revised.



I-17

Figure I-9



Waterfront Plan. The City of Albany, in its most recent waterfront plan, proposed development of a 500-berth marina, 15,000 s.f. of commercial, three restaurants, a park, and day-use facilities on the land at the end of the Albany Peninsula, which was a sanitary landfill from 1968 to 1975.

Bay Conservation and Development Commission.

The primary regional agency which has jurisdiction over the shoreline and tidelands is the Bay Conservation and Development Commission (BCDC). This agency was formed in 1967, largely as a result of citizen opposition to the filling of the Bay. The 1967 McAtteer-Petris Act directed the Commission to compile a detailed study of the Bay and to prepare a comprehensive and enforceable plan for the conservation of the water of the San Francisco Bay and its surrounding shoreline. The BCDC jurisdiction includes all wetlands and the shoreline zone, designated as the area measured 100 feet inland from the point of the highest tidal action. The point of highest tidal action along the Berkeley shoreline is 8.6 feet, MLLW datum.

The BCDC plan designates a waterfront park and beach along the west-facing shoreline from Albany to Emeryville city limits. The plan proposes the use of the BCDC permit areas in Berkeley for commercial recreation, expansion of the existing marina, and a recreational ferry service. It is noted on the plan that some fill may be needed to create usable shoreline areas for protected water areas and park space. Interstate 80 is designated as a scenic road.

Miscellaneous Required Approvals

In addition to BCDC approval, a permit from the U.S. Army Corps of Engineers (COE) would be required for any proposed dredging, filling or construction in or affecting the Bay waters, up to the line of mean high water. A certificate from the San Francisco Bay Regional Water Quality Control Board (RWQCB) verifying satisfactory landfill closure for the Meadow and North Basin Strip would be necessary for COE and BCDC permits.

Development plans affecting water and shoreline areas must be reviewed by the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), and National Marine Fisheries Service (NMFS) for impacts on the area's natural and wildlife resources. These agencies may recommend conditions and mitigation measures for certain impacts. Comments from these agencies are coordinated through the State Resources Agency and forwarded to COE for inclusion in its permit application process. There are on-site opportunities to address goals of the USFWS and CDFG by protecting and enhancing wildlife values.

The City of Berkeley, on behalf of the State Lands Commission (SLC), must find that development plans are consistent with the public trust easement which covers all water areas around the site.

II. Site History and Cultural Resources

BERKELEY WATERFRONT PLAN

SITE HISTORY AND CULTURAL RESOURCES

Prepared by ESA
January 24, 1985

SITE HISTORY AND CULTURAL RESOURCES

A. SITE HISTORY

The physical form of the East Bay shoreline and the City of Berkeley's "waterfront" has changed dramatically since the mid-nineteenth century. The project area then was submerged land, salt marsh, or sand beach. The first account of the East Bay shoreline was recorded in March 1772 by Father Crespi, chaplain and diarist for a small Spanish expedition. He noted the natural richness of the area and evidence of earlier inhabitants.

The area's first inhabitants were the Costanoan who lived in villages along the shoreline for more than 4,000 years./1/ Most of their midden sites have been completely destroyed. Of those remaining, the nearest are found east of I-80 in the City of Emeryville, and west of I-80 at Point Pinole Regional Park and Brooks Island Regional Preserve. Brooks Island has the only undisturbed shell mounds left in the area./1/

The next inhabitants of the shoreline were the Spanish colonists, who introduced agriculture and domesticated animals./1/ In 1820, Luis Maria Peralta received a land grant of more than 48,000 acres which included lands in all the present cities in the project area. His property stretched from San Leandro Creek on the south to Albany Hill in the north./1/ Mexican citizens settled in the area from 1822-1846. Many buildings and places throughout Oakland and Berkeley still carry the Peralta family name.

The California Gold Rush brought thousands of immigrants to the area, and the American Period commenced. The Peralta family could not hold on to their land grant. While the U.S. Coast Survey Map of 1856 indicates that the shoreline was approximately the same as the present east shoreline of Berkeley Aquatic Park, located east of the I-80 freeway and south of University Avenue, it would soon undergo a series of "modifications".

Captain Jacob's Delaware Street Pier (1853), the municipal wharf (1875), and most notably the arrival of the Southern Pacific Railroad in 1878 along the East Bay shoreline focused attention on the waterfront of the newly incorporated City of Berkeley. In 1926, the City of Berkeley leased filled lands to the Golden Gate Ferry Company for construction of a pier./1/ Within a year the pier extended three miles out into the Bay, to overcome the extensive shallow mudflats. Three ferries transported automobiles and passengers to other Bay ports, and industrial goods and supplies were shipped and received.

The first major fill altering the shoreline resulted from construction of the (now I-80) freeway 1,000 yards offshore./2/ The freeway, completed in 1938, connected with the new Oakland - San Francisco Bay Bridge. A small portion of the Bay cut off by the fill was developed as Berkeley's Aquatic Park. In addition to the Aquatic Park, the Works Progress Administration also built a recreational harbor adjacent to the Berkeley pier a half mile into the Bay.

The North Basin Strip was further expanded, covering more tidal marsh mudflats with fill, probably by the City of Berkeley prior to 1946./3/ The fill, composed of municipal and commercial solid waste, was reportedly incinerated before placement. During World War II, the area north of Gilman Street was used as a storage facility for military equipment. Currently, some of this

strip owned by Sante Fe is leased to Pacific Racing Association for horsebarns and parking for the Golden Gate Fields race track.

The Meadow was filled by the City of Berkeley between 1940 and 1962 with a mix of residential and commercial solid waste and construction debris./3/ During this period, portions of the property were diked off and water was pumped out prior to filling. The "meadow" owned by Santa Fe is undeveloped, and is used freely by trespassers for recreational activities such as picnicking, motor biking, and dog walking.

The Brickyard area, south of University, was filled with construction debris during the 1950s. The area was originally submerged. Today, the Brickyard is a partially barren and partially vegetated area covered with brick rubble and other clean fill materials. It is an active fill storage site leased from Santa Fe. The shoreline strip extending south consists of the frontage road, narrow shoulder, and beach used mainly by fishermen and joggers.

NOTES - Site History

/1/ California Department of Parks and Recreation, East Bay Shoreline Feasibility Study, December 1982.

/2/ Hall Goodhue Haisley and Barker, Environmental Reconnaissance of the Berkeley Waterfront, November 22, 1982.

/3/ Harding Lawson Associates, Preliminary Geotechnical Study, Sante Fe Land Improvement Company, Berkeley Waterfront Project, Berkeley, California, July 1983.

B. CULTURAL RESOURCES

An archaeological records search for the project area conducted in 1982 indicated that there were no previously recorded archaeological sites, National Register sites, or California Historical Landmarks situated within or immediately adjacent to the project boundary./3/ Nine archaeological sites were recorded within one-half mile of the eastern boundary of the project area. The project area was found to be situated within a zone that had been subject to continuous inundation during the mid-nineteenth century. As such, the project area was determined to be of low archaeological sensitivity. However, there remains the possibility of subsurface archaeological materials.

NOTE - Cultural Resources

/1/ California Archaeological Inventory, Archaeological Records Search for Property on the Berkeley Waterfront, Alameda County, File 1448-H, Northwestern Information Center, Sonoma State University, June 21, 1982.

III. Physical and Biological Factors

BERKELEY WATERFRONT PLAN

PHYSICAL AND BIOLOGICAL FACTORS

Prepared by ESA
January 24, 1985

PHYSICAL AND BIOLOGICAL FACTORS

A. GEOLOGY, SOILS, AND LANDFILL CLOSURE

GEOLOGY AND SOILS

The site is located on the eastern shore of San Francisco Bay in an area of former tidal marshes and open water./1/ The site was reclaimed between the early 1940s and 1962 by construction of dikes and the emplacement of fill. Elevations vary from mean sea level (msl) to 15 feet above msl,/2/ and the topography generally is flat with relief resulting from small undulations on the order of several feet. The perimeter of the landfill area has been faced with riprap material up to two meters in diameter to prevent erosion by the Bay waters. The riprap supports steep slopes with gradients of up to about 2:1 (horizontal:vertical). Sediment has been deposited by the Bay waters at four places on the site perimeter, creating local beaches. These deposits occur along the southernmost shoreline of the North Basin Strip, at the Meadow/Brickyard boundary, in the northeastern corner of the cove formed by the Brickyard, and on the southernmost shoreline of the Frontage Road Strip. These beaches are generally composed of dark brown-black, clayey, silty, sands. Occasional pebbles, cobbles, and boulders are scattered within the sands.

Bedrock at the site consists of sandstones and shales of the Franciscan Assemblage located at 100 to 200 feet beneath the ground surface./2/ Above the Franciscan units are stiff sedimentary deposits of the Temescal formation that are up to 100 feet thick./2/ Bay mud up to 30 feet thick overlies the Temescal formation. Between 7 and 20 feet of fill, mostly domestic solid waste and construction debris, was deposited above the Bay mud./3/ The fill has been covered with 2 to 11 feet of soil./2/

The three portions of the site vary in fill characteristics, Bay mud thicknesses, soil cover depth, and age of fill. The North Basin Strip consists of 66 acres of land at an elevation of 7 to 12 feet above msl./4/ Bay mud is between 3 and 25 feet thick in this area. During the 1940s, 7 to 13 feet of fill was emplaced above the Bay mud. The fill consists of brick, glass, and metal fragments mixed with black clayey soil./4/ Some of the fill material was incinerated before emplacement. The fill is covered by two to seven feet of soil cover. The northern two-thirds of this area has been paved with asphalt.

The Meadow consists of 72 acres of land at an elevation of 6 to 12 feet above msl, and generally increases in thickness towards the northwest./4/ Fill in this area is 7 to 15 feet of metals, glass, paint, concrete, tires, and organic materials mixed with clayey soil. The fill was emplaced between 1949 and 1962 and is covered with 3 to 11 feet of clayey soils./4/

The Brickyard is 29 acres of land at an elevation of 9 to 17 feet above msl./1/ Bay mud beneath the fill is relatively thin; three to five feet thick./4/ Up to 20 feet of fill consisting of concrete and brick rubble mixed with clayey soil was emplaced during the 1950s./4/ Recently deposited mounds of bricks and other construction debris cover much of the ground surface.

The San Francisco Bay Region is an area of high seismicity. The San Andreas fault, 16 miles west of the site, is capable of generating an earthquake of magnitude 8.3 on the Richter scale./2/ The Hayward fault, 2.5 miles east of

the site, is considered capable of generating a 7.5 (Richter scale) earthquake./2/ Earthquakes of these magnitudes on either fault would produce severe groundshaking at the site.

GEOLOGIC HAZARDS

Settlement has occurred at the site in the past and will continue in the future. Hazards from settlement include structural damage to buildings, broken pavement, and cracked utility lines.

Two processes are responsible for settlement at the site: decomposition of fill and compression of Bay mud. Materials within the landfill decompose and decrease in volume, resulting in settlement at the ground surface. This settlement is most significant in areas underlain by organic-rich fill, which decomposes quickly. Compression of Bay mud is caused by the weight of overlying fill and soil, and depends on the thickness of the Bay mud and fill and the length of time since the fill was emplaced./2/

Future settlement from emplacement of existing fill is estimated at up to one foot in the Meadow and a few inches in the North Basin Strip./2/ The Brickyard is not expected to undergo further subsidence from existing fill, because it is underlain by a relatively thin Bay mud layer and fill that is low in organic materials./2/ Placement of additional fill at the site would cause further settlement, estimated at two to four inches at the Meadow and one to two inches at the North Basin Strip, for one foot of new fill./2/ Additional settlement at the Brickyard from new fill would be insignificant./2/

Differential settlement results from the varying thickness of Bay mud at the site and the heterogeneity of the existing fill. Hazards from differential settlement include structural damage to buildings, broken pavement, and broken utility lines.

The Meadow could undergo differential settlement of up to a few inches./4/ Three three-story hotel structures built in the early 1970s near the northwest corner of the Meadow have undergone differential settlement of up to six inches within a horizontal distance of 60 feet./4/ While these hotels are not on the site, they have been constructed on fill similar to the fill existing at the Meadow./4/ Differential settlement is not expected to be significant at the North Basin Strip or the Brickyard./1/ (See Figure III-1.)

Methane is generated during the decomposition of organic matter and could be produced at the site from decomposition of fill or of peat within the Bay mud./3/ Methane is explosive and flammable if mixed with air at a 1:20 to 1:7 ratio, potentially resulting in damage to structures and human injury./2/ A study of the site detected methane at the North Basin Strip./3/ The source of this methane was not determined and could be either the refuse fill or peat. No methane was discovered at the Meadow or the Brickyard./3/

Seismic activity on the San Andreas or Hayward faults could cause severe groundshaking at the site, potentially resulting in property damage and bodily injury. Secondary hazards from seismic activity include liquefaction, slope instability, and surface rupture.

Liquefaction is the loss of strength of loose, saturated sands resulting from elevated pore pressures. The Bay muds underlying the fill emplaced at the site are not susceptible to liquefaction. However, small discontinuous lenses of sand probably exist within the Bay mud and could be prone to liquefaction.

A sand lense was discovered during drilling for boreholes at the site./3/ Surface settlement would probably result from liquefaction and could result in damage to structures. The amount of surface settlement at the site would probably be minor because of the depth below the surface and the small size of the sand lenses./4/

Slope instability at the perimeter of the site could result from seismic activity in the area./4/ Deformation of the perimeter slopes would probably consist of settlement, lurching towards the Bay, and cracking of the ground behind the slope crest./4/ Rupture of the ground surface could occur because of deformation of slopes or soil by lurching or liquefaction. (See Figure III-1.)

LANDFILL CLOSURE

The Meadow and North Basin Strip are classified as Class II landfills by the San Francisco Bay Regional Water Quality Control Board (RWQCB)./2/ The Brickyard is considered a Class III landfill by RWQCB./2/ Before development could occur, closure is required for Class II landfills but not for Class III landfills. Elements of landfill closure are:

- 1) Sealing of perimeter, to prevent seepage of leachate;
- 2) Creation of impervious cover, to reduce infiltration and generation of leachate;
- 3) Grading ground surface, to promote drainage;
- 4) Compensating for anticipated settlement;
- 5) Control of methane gas./2/

The first two of these objectives are discussed under Hydrology, Drainage, and Water Quality, and the remaining three are discussed below.

Grading of the site would create a sufficient thickness of soil cover over the refuse fill to minimize infiltration of rainfall into the refuse and to provide support for foundations and pavement. The elevation of low-lying areas would be raised to design levels by placement of fill. Ground surface gradients would be created to promote drainage. A geotechnical study of the site recommends three feet of clean soil as a sufficient cover for refuse fill./2/ Most areas of the site apparently have this thickness of soil cover; however, a detailed study of the site should be undertaken to confirm the presence of adequate soil cover./2/ The soil cover should be compacted to reduce its permeability to specifications given in the geotechnical report.

The final elevation of all portions of the site to be developed should be at least seven feet above msl./2/ The North Basin Strip and the Brickyard are at 10 feet and 12 feet above msl, respectively; therefore, filling to raise grade would not be required at these locations. The Meadow is at an average elevation of seven feet above msl, and future settlement is expected./2/ Therefore, filling to raise grade would probably be necessary at the Meadow.

Settlement would result from the placement of additional fill or the construction of structures at the Meadow or North Basin Strip, but would be insignificant at the Brickyard. Settlement would be greatest at the Meadow, requiring surcharging (the temporary emplacement of fill to hasten settlement before development of an area) to prepare for development./2/

Foundation requirements would vary with the size of the building to be supported and the location of the foundation within the site. All structures

at the Meadow would require piles for support, with longer piles required in the northwestern portion of the section./2/ Reinforced grids or spread footings would be adequate for buildings of two stories or less at the North Basin Strip and for buildings of three stories or less at the Brickyard./2/ Larger structures at either area would require pile support./2/

Methane production from refuse peaks within a few years of emplacement of the refuse in a landfill, and declines over the next 20 to 30 years./2/ Therefore, methane production at the site should be minimal because all filling occurred over 20 years ago./2/ However, methane could be trapped by compacted soil or pavement, resulting in a potentially hazardous accumulation of the gas. After development, the site should be monitored for methane, and if necessary, a system to vent methane gas should be installed.

NOTES - Geology, Soils, and Landfill Closure

/1/ Hall Goodhue Haisley and Barker, Environmental Reconnaissance of the Berkeley Waterfront, November 22, 1982.

/2/ Harding Lawson Associates, Preliminary Landfill Closure Plan, Santa Fe Land Improvement Company, Berkeley Waterfront Project, Berkeley, California, August 16, 1984.

/3/ Harding Lawson Associates, Preliminary Landfill Assessment, Santa Fe Land Improvement Company, Berkeley Waterfront Project, Berkeley, California, August 10, 1984.

/4/ Harding Lawson Associates, Revised Report, Preliminary Geotechnical Study, Santa Fe Land Improvmeent Company, Berkeley Waterfront Project, Berkeley, California, August 10, 1984.

B. HYDROLOGY, DRAINAGE, AND WATER QUALITY

HYDROLOGY AND DRAINAGE

Before filling of about 167 acres occurred at the site, the northeastern half of the North Basin Strip was tidal marshs drained by tidal channels and sloughs. The southwestern half of the North Basin Strip and all of the Meadow and Brick Yard were submerged./1/

The site is mostly level with only minor relief resulting from ground surface undulations. Drainage of storm runoff occurs by overland flow into the Bay. No substantial drainage channels or storm drainage facilities exist at the site. In general, the interior of the landfills at the site are lower in elevation than the perimeter dikes. Ponding of storm runoff occurs in areas of low elevation, because of the deranged drainage network at the site. Three creeks draining the Berkeley Hills discharge at the perimeter of the site./2/ Schoolhouse Creek and Strawberry Creek pass underneath the site in culverts; Cogornices Creek is contained in an open channel./2/ The Bay is shallow in the site vicinity with water depths of up to six feet. Tides at the site have a normal range of about 5.9 feet./3/ Mean Lower Low Water (MLLW) is at 2.8 feet below mean sea level (msl) and Mean Higher High Water (MHHW) is at 3.1 feet above msl./3/ The 100-year high tide has an elevation of about 6.4 feet above msl./1/

GROUNDWATER

The groundwater table at the site fluctuates in depth below the ground surface during the year. In March 1983, the depth of the groundwater table beneath the ground surface was one-and-one-half to two feet at the Meadow, one-and-one-half to five feet at the North Basin Strip, and seven feet at the Brickyard./1/ During August 1983, depth of the ground water table below the ground surface was four-and-one-half to six-and-one-half feet at the Meadow, four-and-one-half to six-and-one-half at the North Basin Strip, and six feet at the Brickyard./1/ The elevation of the ground water table above msl was 6 to 11 feet in March 1983 and one-half to six-and-one-half feet in August 1983./4/

A search of the site perimeter revealed eight locations where groundwater was potentially seeping into the Bay./4/ The seepage locations all had flows of about one to five gallons per minute./4/ A chemical analysis of the seepage water suggested that at six of the eight locations, seepage consisted only of return flow from the previous high tide. At the two other locations, the south end of the Meadow and the Meadow / North Basin Strip boundary, the seepage probably contained leachate (groundwater from the refuse fill)./4/ (See Figure III-2.)

An aquifer probably exists in the sediments underlying the Bay mud underneath the site. This aquifer is isolated from the leachate in the landfill by the low permeability of the Bay mud./4/ No wells exist at the site, but industrial wells east of the site draw upon this aquifer./4/

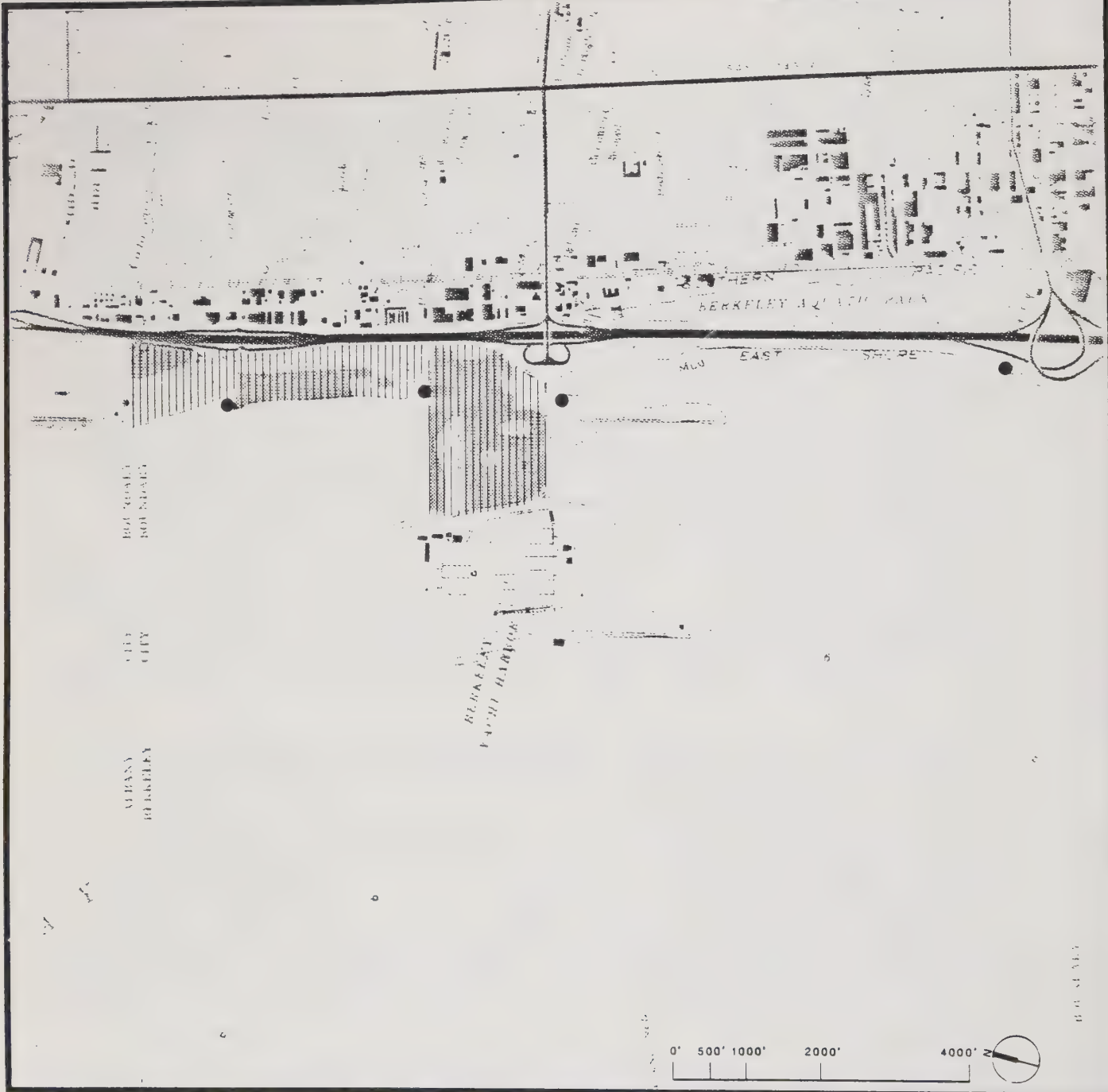
FLOODING

Flooding at the site could result from surface runoff, a tsunami, or high tides. The 100-year flood from storm runoff affects only the extreme northwest corner of the Brickyard./3/ The remainder of the site is not flooded by this event; however, local ponding of runoff occurs in low-lying areas. The 100-year tsunami has a runup at the site of six and one-half to seven feet above msl./1/ Portions of the site, including the northwest corner of North Basin Strip and much of the Meadow, are below this elevation and would be inundated by this event./3/ The 100-year tide reaches an elevation of about 6.4 feet above msl, and could flood low-lying portions of the Meadow./1/ (See Figure III-2.)

WATER QUALITY

Surface water quality is probably good because the site does not receive significant amounts of runoff from developed areas. Vehicles using roadways at the site and on the boundary of the site probably generate oil, grease, and rubber which contaminate surface runoff. Water discharged from the outfall of Strawberry Creek, which drains an urban area, was found to be polluted with fecal material./2/ This pollution probably affects water from many storm drains and creeks in the site vicinity./2/ However, it probably does not affect surface water at the site because it is undeveloped.

Bay water in the site vicinity is of poor quality. A sampling program conducted along the Emeryville, Berkeley, and Albany shorelines found coliform counts which generally exceeded Regional Water Quality Control Board (RWQCB) standards for water-contact recreation./2/ Levels of bacteria were found to be highest in July. Additional bi-monthly monitoring of Bay water quality has been conducted by East Bay Municipal Utilities District (EBMUD) in the



HYDROLOGY

Figure III-2

Legend

- Flooding Hazards from Tsunami
- Class-II Landfill Leachate
- Storm Sewer Outfalls

SOURCE: Hall, Goodhue, Haisley and Barker, November 22, 1982.
Harding Lawson Associates, August 16, 1984.

BERKELEY WATERFRONT PLAN

ROMA

Planning and Urban Design

Anthony/Fleming Associates

Community Involvement

ESA

Environmental Assessment

DKS Associates

Transportation

McGuire and Company

Market and Fiscal Analysis

PAD

Social Analysis

Wilson-Porter

Civil Engineering

vicinity of the Berkeley Pier. In this area, bacteria counts exceeded standards for water-contact sports only twice during 1984. Both elevated bacteria counts were recorded during the winter rainy season./5/ EBMUD has also tested Bay water for dissolved oxygen counts, nutrients, and biochemical oxygen demand. No violations of RWQCB standards for these water quality criteria were found during 1984./5/ No testing has occurred for heavy metals or synthetic compounds in Bay water in the site vicinity./5,6/

One source of pollutants contaminating Bay water in the site vicinity is apparently outfall from storm drains, creeks and effluent discharge points./2/ (See Figure III-2.) Bacteria levels were found to be above RWQCB standards within creeks in Berkeley and in the immediate vicinity of Creek outfalls at the site./2/ However, coliform bacteria counts are reduced rapidly by the dilution of storm outflow with Bay water./2/

Leachate at the site was analyzed for the presence of pollutants./4/ No contaminants that are identified by the U.S. Environmental Protection Agency (US EPA) as priority pollutants were found; however, bis phthalate (DEPH), di-n-octyl phthalate (DOP), chromium, copper, lead, mercury, nickel, zinc, and organic compounds were detected./4/ Levels of DOP and DEPH are within standards set by the US EPA for contaminated groundwater./4/ The concentrations of chromium, copper, lead, mercury, nickel and zinc exceed standards set for safe drinking water./4/ Since groundwater at the site is not used or intended for domestic purposes, these concentrations of heavy metals do not present a serious public health hazard./4/ Overall, the leachate at the site was typical of that found at many landfills. The quality of leachate at the Brickyard was better than that of leachate at the Meadow and North Basin Strip because the refuse fill at the Brickyard includes less organic material./4/

Leachate at the site is isolated from infiltrating rainwater and the aquifer underlying the site. The soil cover on the landfill consists of relatively impervious clayey material, preventing infiltration of rainfall. Underneath the refuse fill is Bay mud, which is also relatively impervious. If the Bay mud is penetrated, artesian pressures within the aquifer would probably prevent contamination by the leachate./4/ Seepage of leachate into the Bay is occurring at two locations on the perimeter of the site, and could adversely affect the quality of Bay water./4/

NOTES - Hydrology, Drainage, and Water Quality

/1/ Harding Lawson Associates, Revised Report Preliminary (Geotechnical Study, Santa Fe Land Improvement Company, Berkeley Waterfront Project, Berkeley, California, August 10, 1984.

/2/ Doris Sloan (ed.), The East Bay Shoreline, Selected Environmental Issues, June 1982.

/3/ Hall Goodhue Haisley and Barker, Environmental Reconnaissance of the Berkeley Waterfront, November 22, 1982.

/4/ Harding Lawson Associates, Preliminary Landfill Assessment, Santa Fe Land Improvement Company, Berkeley Waterfront Project, Berkeley, California, August 10, 1984.

/5/ Dan Kimm, Associate Environmental Engineer, East Bay Municipal Utility District, telephone conversation, January 4, 1985.

/6/ Vincent Spencer, Supervising Sanitarian, Berkeley Office of Environmental Health, telephone conversation, January 4, 1985.

C. BIOLOGICAL RESOURCES

REGIONAL

The Berkeley Waterfront is the center of the extensive northern East Bay Shoreline which runs from Emeryville to Richmond. Much of the project area was originally submerged land, salt marsh, or sandy beach which has been "reclaimed" and covered with fill in stages since the early 1900s to the present. In the first written account of this shoreline, Father Crespi in 1772 commented on the natural richness of the area, in particular the abundance of waterfowl. Today, the East Bay shoreline contains important acreage of diminishing Bay salt marsh habitat as well as intertidal mudflats and beaches.

The project area is bounded on the west by San Francisco Bay and on the east by the I-80 freeway corridor. Two valuable wildlife areas lie on either side of the project area to the north and the south. Beyond the Golden Gate Fields race track, which is immediately north of the project site, is the Albany mudflats / salt marsh. This area is a major habitat for a variety of shorebirds and waterfowl, including some rare and endangered species such as the clapper rail, brown pelican and the least tern./1/

South of Berkeley's city boundary is the Ashby Spit, an open narrow land strip surrounded by productive clam beds. Beyond this is the Emeryville Crescent. This 500-acre area includes marshland, mudflats and a shallow bay fed by the freshwater Temescal Creek. The Crescent is an important habitat for several rare and endangered species such as the salt marsh harvest mouse, snowy plover, clapper rail, and arctic tern./1/ In fact, this shoreline stretch is the only location along the North American Pacific Coast where the arctic tern is found on land./1/ This area is an important roost for shorebirds and is a striped bass spawning area as well. Over 120 species of birds have been observed along the East Bay shoreline including species that visit the area seasonally on their migration along the Pacific Flyway.

PROJECT AREA

Several recent studies have analyzed the East Bay shoreline and the Berkeley Waterfront. In 1982, WESCO, a private consulting firm, performed a field reconnaissance and report on the ecological resources of the Sante Fe properties within the project area. Other studies have been done by the Department of Parks and Recreation (1982), the State Coastal Conservancy (1982), and a Senior Seminar class at UC Berkeley (1982). A brief site inspection was made by ESA in January 1985.

The project site can be divided into four habitat areas: upland, shoreline, mudflats, and open water. (See Figure III-3.)

Upland

Vegetation

Only about half the land within the project area is covered with vegetation. The remainder consists of bare soils, pavement and deposits of trash, fill materials and brick rubble. No significant natural vegetation occurs here.

The on-site upland vegetation is typical of ruderal areas: weedy cover consisting of grasses, dense herbaceous and occasional shrubs. The vegetation is composed mostly of non-native species including some escaped exotics from neighboring landscaped properties. Vegetation has been established through a process of natural invasion, and by transport in fill materials or by wind or visiting birds. The dominant introduced species include/2/:

wild radish	<u>Raphanus sativus</u>
mustard	<u>Brassica sp.</u>
wild oat	<u>Avena fatua</u>
poison hemlock	<u>Conium maculatum</u>
thistles	<u>Carduus pycnocephalus</u>
	<u>Cirsium spp.</u>
sweet fennel	<u>Foeniculum vulgare</u>
wild barley	<u>Hordeum spp.</u>
Italian ryegrass	<u>Lolium multiflorum</u>

Scattered native shrubs are also present including coyote brush (Baccharis pilularis spp. consanguinea), blackberry (Rubus sp.) and willow (Salix sp.)

The 71+ acre Meadow subarea of the project site is the most densely vegetated, and is crisscrossed by dirt paths evidencing pedestrian and motor bike use. Much of the almost 30-acre Brickyard area is barren, or as the name indicates, covered with brick rubble plus other fill materials. "Clean" fill is still being dumped on the site. The Brickyard spit, extending into the South Basin, is partially covered with ruderal vegetation. Coyote brush is predominant, often forming a hedge between land and the stone riprap which descends steeply to the water. The Frontage Road Strip south of the Brickyard consist of paved road, the road shoulder with scant weeds and stone riprap descending to the water or a narrow beach strip at the southern end. The North Basin strip is currently paved or barren with scattered weedy vegetation. Part of this area is developed with the horsebarns for Golden Gate Fields race track.

California Native Plant Society records indicate that there are no known rare or endangered plants in the upland area./3/ No unusual or sensitive populations were encountered during Wesco's 1982 field survey./2/ In its 1982 Feasibility Study of the East Bay Shoreline, the Department of Parks and Recreation identified the south end of the Brickyard spit as a possible location of the rare plant Cordylanthus maritimus spp. palustis (Point Reyes Bird's Beak)./1/ The report stated that while known occurrences here have been extirpated, this plant may still exist in the area. The presence of this rare plant on the project site remains undocumented./2/ Further, during the 1982 field survey no cordylanthus was encountered nor was significant suitable marsh habitat found./2/

Wildlife

The weedy upland fill areas are inhabited by a variety of animals which are often associated with urban habitat. Common birds include the mourning dove

(Zenaidura macroura), European starling (Sturnus vulgaris), Brewer's blackbird (Euphagus cyanocephalus), American goldfinch (Spinus tristis), house finch (Carpodacus mexicanus), and song sparrow (Melospiza melodia). (See Table III-1.)

Common but less conspicuous animals in the area include the house mouse (Mus musculus), rat (Rattus norvegicus and R. rattus), vole (Microtus californicus), pocket gopher (Thomomys bottae), black tail jack rabbit (Lepus californicus), and western fence lizard (Sceloporus occidentalis)./2/

The ruderal vegetation in the project area, while being a "non-natural" habitat of mostly non-native species, is important because in many areas this type of vegetation constitutes the only upland habitat remaining between the Bay water and dense urban development around the Bay. Ruderal areas are not generally protected as wildlife habitat, and are easily lost to development, as are terrestrial wildlife species which have adapted to these open space areas. The upland vegetation may also provide some nesting and roosting habitat for waterbirds discussed below.

There are no rare or endangered animals in the upland area.

Marine Habitats: Shoreline, Mudflat, Open Water

The project area contains typical bayshore environments: riprapped shorelines, mudflats, narrow sand/gravel beaches and shallow open water. (See Figure III-3.) Though intertidal elevations in Brickyard Cove appear to be suitable for cordgrass (Spartina foliosa), Wesco (1982) found that this area lacked even the most common salt marsh plants. In general, there are no significant upper marsh or transition communities in the area.

Storm drain outlets, carrying rain water and wastes from the streets of Berkeley, also are a feature of the shoreline. Conditions around these outlets are described briefly below.

The Bay, Bay shoreline and mudflats in the project area provide valuable resting and feeding habitat for large numbers of waterbirds. Waterbird populations in the Bay Area are generally highest in early winter, corresponding with the peak migratory period. Population levels typically remain high through the winter and early spring. There is a gradual decline to low early- to mid-summer levels but by the end of July waterbird numbers begin increasing again with the arrival of migrant shorebirds./2/ Bird species observed during the field survey are noted below by habitat. During the Audubon Society's annual Christmas bird count, over 50 species of waterbird, more than 1,500 birds, were sighted on a single day./7/

Shoreline

Most of the shoreline within the project area is heavily riprapped although there are a few patches of beach formed recently by natural deposition. The stone riprap, necessary to protect the shore edge from erosion, generally descends steeply to the water or beach. Erosion is evident in some areas behind the riprap barricade.

The riprap and beach areas form the transition between the upland and aquatic habitats. Though the riprap has low habitat value compared to natural shoreline, terrestrial and marine life have encroached upon this area. Upland vegetation grows along the top of the riprap in some areas. During the 1985

TABLE III-1

EAST BAY SHORELINE BIRD INVENTORY

AQUATIC SPECIES

Commonly Seen	Occasionally Seen	Rarely Seen
Common loon	Red-necked grebe	Ashy petrel
Arctic loon	Pelagic cormorant	White pelican
Red-throated loon	Black brant	White-fronted goose
Western grebe	Shoveler	Canada goose
Horned grebe	Redhead	Cinnamon teal
Eared grebe	Great blue heron	Green-winged teal
Pied-billed grebe	Green heron	Barrow's goldeneye
Brown pelican	Snowy plover	Common scoter
Double-crested cormorant	Semipalmated plover	Virginia rail
Mallard	Long-billed curlew	Sora rail
Pintail	Spotted sandpiper	Clapper rail
Canvasback	Greater yellowlegs	Black-necked stilt
Greater scaup	Knot	Black tern
Lesser scaup	Sanderling	Common murre
Common goldeneye	Glaucous-winged gull	Least tern
Bufflehead	Heermann's gull	Arctic tern
White-winged scoter		
Surf scoter	<u>LAND SPECIES SEEN IN MARINA AREA:</u>	
Ruddy duck	Burrowing owls*	White-crowned sparrow
Common merganser	House sparrow	House finch
Red-breasted merganser	Red-winged blackbird	Brewer's blackbird
Common egret	Starling	Meadowlark
Snowy egret	Horned lark	Barn swallow
Black-crowned night heron	Rock dove	Mourning dove
American coot	Short-eared owls*	Barn owls*
American avocet		
Black-bellied plover	<u>THE FOLLOWING SPECIES ARE LISTED IN A PUBLICATION</u>	
Killdeer	<u>BY THE BERKELEY MARINA:</u>	
Marbled godwit	American bittern	Red-tailed hawk
Willet	Least bittern**	Marsh hawk
Ruddy turnstone	Whistling swan**	Red phalarope**
Dunlin	Yellow-breasted chat	Wilson's phalarope
Least sandpiper	Wilson's plover	Sparrow hawk
Western sandpiper	Wilson's snipe	Pheasant
Northern phalarope	Oldsquaw	Sandhill crane
Western gull	Blue-winged teal	Purple gallinule**
Herring gull	Anna's hummingbird	American oyster-catcher
California gull	Widgeon	Whimbrel
Ring-billed gull	Wood duck	Dowitcher
Mew gull	Turkey vulture	Black guillemot**
Bonaparte's gull	White-tailed kite	Goldfinch
Forster's tern	Short-shinned hawk	Belted kingfisher
Caspian tern	Cooper's hawk	Long-billed marsh wren

*The presence of owls in the marina area is mentioned in an Environmental Impact Report submitted to the City of Berkeley on the Park Marina Shopping Center Development Project in 1971. The ecological consultant for the EIR was David A. Mullen, Ph.D. Mullen notes that the owls rely on rats, mice, and insects in the dump areas as a source of food.

**David Smith, Research Director at the International Bird Rescue Center, seriously doubts that the least bittern, whistling swan, Wilson's plover, and red phalarope have been spotted in recent years and guarantees that purple gallinules and black guillemots have never been seen in Berkeley.

SOURCE: California Department of Parks and Recreation, East Bay Shoreline Feasibility Study, December 1982.

field survey, jack rabbits sprang from the rock crevices on Brickyard spit and other small mammals may inhabit the dry upper riprap. Around the storm drain outfalls, where the riprap is alternately submerged and exposed with the tides, luxuriant attached algae covers the boulders.

The four narrow beach strips located at: 1) the south shoreline of the North Basin, 2) the northeast shoreline of the South Basin at the Strawberry Creek outfall, 3) the northeast corners of Brickyard Cove and 4) the southeast shore of the South Basin, are generally composed of a sandy mud material, which is essentially an expansion of the shallow mudflats just offshore. As such, these beaches share much of the bird and invertebrate life found in the mudflat habitat discussed below. The market crab is generally present in these sandier areas./1/ Further, terrestrial bird species as well as shorebirds were observed feeding along the sandy shore around the Strawberry Creek outfall.

Mudflats

Bay mudflats extend offshore along most of the project area's western perimeter. The nearshore mudflats are intertidal and hence exposed daily with the tide cycle. Submerged mudflats extend into the Bay. Of these, the large mudflat in Brickyard Cove is the most valuable marine habitat and wildlife area in the project area./2/ Mudflats contribute significantly to the primary food production of the Bay. Often imperceptible but abundant are the diatoms and algae (blue, blue-green and yellow-green), which replenish oxygen in the water and serve as the first link in the food chain supporting invertebrates, fish and birds.

The mudflats are rich in invertebrate life including polychaete worms, nematodes, bentnose clams, soft shelled clams, japanese little neck clams, eastern and pacific oysters, and ribbed horse and bay mussels. Sampling of invertebrates along the project shoreline by Wesco in 1982 indicated a uniform distribution and apparently normal composition of organisms, although storm drain areas were excluded./2/ (See Table III-2.) Bay-wide water quality problems have curtailed commercial shellfish harvesting, but uncontrolled recreational collecting occurs around the Bay. A 1981 survey conducted for the East Bay Municipal Utility District revealed that sections along the Brickyard were moderately exploited for shellfish and the south end of Marina nearby was heavily exploited. Population surveys performed in the Berkeley Marina area, including the North Basin Cove and Brickyard, in 1982 indicate a stable shellfish population of approximately 400,000. These surveys focused on species of recreational interest and did not include bay mussel populations which are dense in some areas./4/

Many species of waterbird are commonly found along the mudflats. Those observed during field survey include: the great egret (Casmerodius albus), snowy egret (Leucophoyx thula), black-crowned night heron (Ardea herodias), killdeer (Charadrius vociferus), and herring gull (Larus argentatus). (See Table III-1.)

Open Water

The project area includes submerged land / open water areas. Water temperatures in the Bay are generally between 50 and 60°F, and slightly warmer in the shallower, more protected areas warmed by summer sun. Along the northern California coast during the summer months, ocean currents move warmer surface waters off shore, and cold waters, rich in nutrients, well up from great depths.

TABLE III-2

Partial List of Marine Fauna, Berkeley Waterfront Area

Cursory examination of benthic samples indicated the frequent presence of the following organisms:

ANNELIDA

Oligochaeta

Polychaeta

Asychis elongataChone gracilisExogone loureiHeteromastus filiformisPseudopolydora paucibranchiataStreblospio benedicti

ARTHROPODA

Amphipoda

Ampelisca milleri

(most numerous organism)

Corophium spp.Grandidierella japonica

Decapoda

Hemigrapsus oregonensis

(among rocks along shoreline)

Ostracoda

Tanaidacea

CNIDARIA

MOLLUSCA

Bivalvia

Gemma gemmaMacoma spp.Tapes japonica

SIPUNCULOIDEA

MISCELLANEOUS

Bryozoa

Egg cases

Shoreline and mudflat observations:

ARTHROPODA

Decapoda

Hemigrapsus oregonensis

(among rocks and bricks)

MOLLUSCA

Bivalvia

Gemma gemma (avg. shell size 0.4 cm)Mya arenaria (avg. shell size 3.5 cm)

SOURCE: WESCO, Ecological Reconnaissance, in Hall Goodhue Haisley and Barker, Technical Background Reports for the Berkeley Waterfront, July 1983.

The diverse invertebrate life listed above inhabit the submerged mudflats. Several species of fish are found in the Bay waters. These include shiner perch (Cymatogaster aggregata), starry flounder (Platichthys stellatus), striped bass (Marone saxatilis), top smelt (Atherinops affinis), and anchovy (Engraulis mordax). Several hundred waterbirds were observed on the open water within the project area boundaries and just beyond. These included mallards, american coots, gulls, and cormorants. Many waterbird species feed on the fish and invertebrates abundant in the waters.

Rare and Endangered Species

The mudflat in Brickyard Cove lacks salt marsh vegetation, though the intertidal elevations appear to be suitable for cordgrass (Spartina foliosa)./2/ Further, there are not significant upper marsh or transition communities present. As such, there is no suitable habitat in the project area for the endangered clapper rail (Rallus longirostris), black rail (Latterallus jamaicensis), or salt marsh harvest mouse (Reithrodontomys raviventris). The mudflats, however, are used occasionally by the endangered brown pelican (Pelecanus occidentalis), and may be foraged sporadically by the peregrine falcon (Falco peregrinus) and the least tern (Sterna albifrons)./2/ "Species of concern" found in the area are the double-crested cormorant (Phalacrocorax auritus), long-billed curlew (Numenius americanus), and the rarely seen white pelican (Pelecanus erythrorhynchos).

Water Quality

Water quality concerns for biological resources in the project area center on the possible adverse impacts of 1) the storm drain outlets and 2) leakage of leachate to the Bay along the perimeter of the landfills.

Sampling of water in the storm drain outfall areas (see Figure III-2) show high fecal coliform counts, which are due apparently to animal and other wastes from city streets./5/ During Wesco's site inspection in 1982, strong odors were detected in outfall areas. High nutrient/waste composition is indicated by the luxuriant attached algae on the riprap surrounding these areas. While outfall areas were not examined quantitatively during the site surveys, they probably contain a high composition of anaerobic benthos and a very low macroinvertebrate population./2/ Visual evidence indicates that these outfall areas may be detrimental to the local marine biota and associated bird life, in addition to presenting a public health hazard./2/

Leachate quality and potential for seepage of leachate from the landfills to the Bay were evaluated by Harding Lawson Associates in 1982. The leachate in the landfills is indicative of decomposition of organic materials. Chemical analyses for indicators of the presence of hazardous waste showed no significant quantities of EPA's priority pollutants. Two locations were identified where leachate is probably seeping into the Bay: the south end of the North Basin Strip area; and along the southern perimeter of the Meadow across the embayment from the Brickyard. Seeps at these location were found to be flowing at less than one gallon per minute (gpm). Chemical analysis suggested that the seeps are from sources within the landfill, but test results of the seeps did not vary significantly from results for surrounding Bay waters./6/ While these seeps do not appear to be as significant a pollution source as the storm drains, they do contribute to the deterioration of water quality in the project area.

In the project area, high organic waste is the most significant type of water pollutant, although nutrients and trace metals may also be present in significant quantities. Discharge of high organic waste loads into the Bay reduces the dissolved oxygen in the water and can adversely affect local aquatic populations. Furthermore, shellfish which are filter feeders may concentrate bacteria and viruses up to 100 times, and chemical contaminants up to several hundred times, the values in surrounding water. The greatest concern is for humans and other animals (e.g., birds) that consume these "contaminated" shellfish, since the shellfish appear able to survive the contamination. However, while little is known about the adverse impacts of wastewater on benthic communities, recent studies are beginning to uncover physiological indications of stress in Bay organisms which might be induced by various forms of water pollution./8/

NOTES - Biological Resources

/1/ California Department of Parks and Recreation, East Bay Shoreline Feasibility Study, December 1982.

/2/ Wesco, Berkeley Waterfront Biological Survey, published June 1982, in Technical Background Reports for the Berkeley Waterfront, compiled by Hall, Goodhue, Haisley and Barker, July 1983.

/3/ California Native Plant Society, Rare and Endangered Species listing 1980, 1981, 1982, cited in Wesco, Berkeley Waterfront Biological Survey, June 1983.

/4/ James E. Sutton, Shellfish Resources of Eastern San Francisco Bay: Distribution, Abundance, Public Access and Use. Prepared for the East Bay Municipal Utility District, March 1981.

/5/ Aaron E. Jeung, Water Quality Management Along the East Bay Shoreline Area, in The East Bay Shoreline, Selected Environmental Issues, Doris Sloan, ed., UC Berkeley, June 1982.

/6/ Harding Lawson Associates, Preliminary Landfill Assessment, Sante Fe Land Improvement Company, Berkeley Waterfront Project, Berkeley California, August 10, 1984.

/7/ Golden Gate Audubon Society, Campbell (compiler), "Oakland Christmas Bird Count", December 16, 1984. Area B and C.

/8/ Luoma and Claern, "The Impact of Waste-Water Discharge on Biological Communities in San Francisco Bay", in Conomos (ed.), San Francisco Bay Use and Protection, Pacific Division AAAS, 1982.

D. CLIMATE AND AIR QUALITY

CLIMATE

The Berkeley Waterfront is located in an area of generally mild climate with cool, windy conditions, particularly in the spring and summer. A persistent on-shore airflow is the most significant factor affecting the site. Wind monitoring at the Berkeley Marina indicates that the prevailing wind directions are from the southwest and west-southwest, and occur about 35% of the time. Winds from all other directions combined occur about 65% of the time./1/ Westerly winds from San Francisco Bay dominate in spring and summer

when the average wind speed is highest, and southerly winds associated with storms and rain are more frequent in winter. Calm conditions occur about 10% of the year. Winds 1-10 mph occur about 40% of the year, 10-15 mph winds about 25% of the year, 15-20 mph winds about 16% of the year, and winds over 20 mph about 9% of the year./2/ Wind speeds greater than 10 mph, which can cause annoyances such as wind-blown dust and disturbance to outdoor diners, occur 50% of the time at the Berkeley Waterfront./2/

The area also is frequently affected by low clouds and stratus, particularly during summer mornings./1/ Annual temperatures range from the lower 40's in the winter to the lower 70's in summer. Precipitation in the area averages 23 inches per year.

AIR QUALITY

The Bay Area Air Quality Management District (BAAQMD) operates a regional air quality monitoring network in order to gauge progress toward attainment of national and state ambient air quality standards. At monitoring stations throughout the network, readings are taken regularly of the major air pollutants for which air quality standards have been set by both federal and state governments: photochemical oxidants (ozone), carbon monoxide (CO), total suspended particulates (TSP), nitrogen (NO₂), and sulfur dioxide (SO₂). The Bay Area as a whole, and Alameda County in particular, are designated as non-attainment areas with respect to the national ambient air quality standards for ozone and CO. A five-year summary of the available data on these pollutants, collected at the BAAQMD's monitoring station closest to the project site (Alice Street in Downtown Oakland, about five miles south of the site), and the corresponding national or state air quality standards, are shown in Table III-3. As this table shows, data collection for NO₂ and TSP was discontinued in 1980 when the station was moved from its previous location on Jackson Street. Sulfur dioxide levels have not been measured in Oakland.

Comparisons of these data with air quality standards and with readings taken at other BAAQMD monitoring stations reveal that air quality is generally good in the vicinity of the monitoring station. The trends and pollutant levels shown in the table are generally indicative of conditions at the project site./3/

Regionally, the most severe and complex air quality problem is the relatively high level of ambient ozone experienced during warm, meteorologically stable periods in summer and autumn. Ozone is not emitted directly from pollutant sources, but is produced in the atmosphere through a series of photochemical reactions involving hydrocarbons and nitrogen oxides. No single source category accounts for a majority of the hydrocarbon and nitrogen oxides emissions, and the many sources are spread throughout the region. The problem is most serious in northern Santa Clara County and, to a lesser extent, in the inland reaches of eastern Contra Costa and Alameda Counties, but ozone standard violations are rarely experienced in Oakland because of the moderating effects of San Francisco Bay on local temperatures. In general, ozone levels comparable in magnitude to those measured at the Oakland monitoring station can be expected in the project vicinity.

In contrast, CO is a sub-regional problem because CO is a non-reactive pollutant with one major source category, motor vehicles. Usually, ambient CO distributions closely follow the spatial and temporal distributions of vehicular traffic, and are strongly influenced by meteorological factors such as wind speed and atmospheric stability. The one-hour and eight-hour CO

TABLE III-3: OAKLAND AIR POLLUTANT SUMMARY, 1979-1983

STATION: Alice Street (1980-83); moved from Jackson Street in 1980

POLLUTANT:	STANDARD	1979	1980	1981	1982	1983
OZONE (O ₃) (Oxidant)						
1-hour concentration (ppm) (a)						
Highest hourly average	0.12 (b,c)	0.11	0.12	0.09	0.07	0.12
Number of standard excesses		0	0	0	0	0
CARBON MONOXIDE (CO)						
1-hour concentration (ppm) (a)						
Highest hourly average	20 (d,e)	11	12	12	10	N/A(a)
Number of standard excesses		0	0	0	0	0
8-hour concentration (ppm) (a)						
Highest 8-hour average	9.0 (d)	7.4	7.4	6.0	7.5	7.3
Number of standard excesses		0	0	0	0	0
TOTAL SUSPENDED PARTICULATE (TSP)						
24-hour concentration (ug/m ³) (a)						
Highest 24-hour average	100 (d,g)	181	101	N/A	N/A	N/A
Number of standard excesses(f)		6	1	N/A	N/A	N/A
Annual concentration (ug/m ³)						
Annual Geometric Mean	60 (d,g)	50	50	N/A	N/A	N/A
NITROGEN DIOXIDE (NO ₂)						
1-hour concentration (ppm)						
Highest hourly average	0.25 (d)	0.19	N/A	N/A	N/A	N/A
Number of standard excesses		0	N/A	N/A	N/A	N/A

(a) ppm: parts per million; ug/m³: micrograms per cubic meter; N/A: Not Available.

(b) National standard, not to be exceeded more than once per year, except for annual standards which are not to be exceeded at all.

(c) The national ozone standard was revised from 0.08 ppm to 0.12 ppm in January 1979. Expected Annual Excess is a three-year average of annual excesses of the national standard.

(d) State standard, not to be equaled or exceeded, except for CO standards, which are not to be exceeded.

(e) The state one-hour CO standard was changed from 35 ppm to 20 ppm in January, 1983. The national one-hour standard remains 35 ppm.

(f) Measurements are taken once every six days.

(g) The California Air Resources Board (CARB) has redefined the state particulate standard to apply to "inhalable" particles only (i.e. those which have a diameter less than 10 microns). The new standards are 50 ug/m³ for 24-hour averages and 30 ug/m³ for the annual geometric mean. No data are currently available on the particle size distribution of the TSP sampled at the Oakland monitoring station. According to the CARB, however, the new standards are "reasonably equivalent" to the old standards shown above.SOURCE: BAAQMD, 1979-1983, Contaminant Summaries and California Air Resources Board, Air Quality Data Summaries 1979-1983.

standards are occasionally exceeded in parts of the Bay Area which combine high traffic density with susceptibility to the occurrence of surface-based radiation inversions/4/: the heavily urbanized portions of northern Santa Clara, western Alameda, and southwestern Solano Counties. At present, CO concentrations at the Oakland monitoring station are within the established standards. CO concentrations at the project site probably are similar or slightly lower.

Levels of TSP in the Bay Area typically show a pattern of low values near the coast, increasing with distance inland, and reaching a peak in dry, sheltered valleys, such as the Santa Clara, Diablo, and Livermore Valleys. The 24-hour primary standard/5/ has been met everywhere in the Bay Area during the last five years. However, the 24-hour secondary standard/5/ is occasionally exceeded in many Bay Area communities. The most important sources of TSP in Alameda County are demolition and construction activity, and motor vehicle travel over paved and unpaved roads. Such TSP emissions are difficult to control with methods currently available. CO concentrations at the project site probably are similar or slightly lower than those at the Oakland monitoring station.

The major sources of NO₂, a compound essential to the ozone formation cycle, are vehicular, residential, and industrial fuel combustion. Violations of the one-hour standard occur occasionally in the Bay Area, but such occurrences have become much less frequent in recent years. The standard was last exceeded in San Jose in 1980. Concentrations of NO₂ generally decline as one moves north from San Jose, so it is highly probable that the NO₂ standard is met in Oakland and its environs. The NO₂ standard is currently being met at monitoring stations throughout the Bay Area, and the BAAQMD expects that it will continue to be met in the future.

The burning of high-sulfur fuels for activities such as the generation of electricity, petroleum refining, and shipping is the major source of ambient SO₂. The highest levels of SO₂ in the Bay Area are recorded in a relatively narrow crescent on the bayshore of northern Contra Costa County, where the major sources are located. These maxima rarely exceed 50% of the standard. Ambient concentrations of SO₂ decrease rapidly as one moves south of this crescent. The SO₂ standard is currently being met in the Bay Area, and the BAAQMD expects that it will continue to be met in the future.

NOTES - Climate and Air Quality

/1/ Donald Ballanti, Meteorology Report in Hall Goodhue Haisley and Barker, Technical Background Reports for the Berkeley Waterfront, prepared for the Santa Fe Land Improvement Company, July 1983.

/2/ Hall Goodhue Haisley and Barker, Environmental Reconnaissance of the Berkeley Waterfront, prepared for the Santa Fe Land Improvement Company, November 22, 1982.

/3/ Contour maps showing the general distribution of air pollutant concentrations in the Bay Area can be found in the San Francisco Bay Area Annual Air Quality Report for 1980, BAAQMD, ABAG, and MTC, July 1981, pp. 44-45. A more recent ozone contour map can be found in the 1982 Bay Area Air Quality Plan, BAAQMD, ABAG, and MTC, December 1982, p. 49.

/4/ An inversion is a condition under which warm air aloft limits upward dispersion of pollutants contained in a colder layer of air near the surface.

/5/ Primary standards are the levels of air quality necessary to protect the public health with an adequate margin of safety. Secondary standards are the levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

E. NOISE

NOISE SOURCES

Typical of many areas in the East Bay, the project site is subject to noise from several sources, including automobile and truck traffic, railroad and industrial operations, and natural sources such as wind.

The major source of time-averaged ambient noise levels in the area is the heavy traffic on the Interstate-80 freeway, and on major arterials and collectors such as University Avenue, Gilman Street, and Ashby Avenue. I-80 adjacent to the project site carries up to about 204,000 vehicles per day. The major source of individual intrusive noises is train traffic associated with the Southern Pacific Railroad tracks one quarter-mile east of the project site.

NOISE DESCRIPTORS AND EFFECTS

Environmental noise is measured in units of dBA. The dBA, or A-weighted decibel, refers to a scale of noise measurement which approximates the range of sensitivity of the human ear to sounds of different frequencies. On this scale, the normal range of human hearing extends from about 0 dBA to about 140 dBA. A 10 dBA increase in the level of a continuous noise represents a perceived doubling of loudness; a 2 dBA increase is barely noticeable to most people.

Human response to noise is subjective, and varies considerably from individual to individual. Effects of noise, at various levels, can include interference with sleep, concentration, and communication; physiological and psychological stress, and even hearing loss. Noise levels are often classified according to the following scale: 30 dBA, very quiet; 45 dBA, quiet; 70 dBA, loud; 95 dBA, very loud; and 120 dBA, painfully loud. The sound level of speech is typically about 60 to 65 dBA. In general, noise begins to interfere with a listener's understanding of speech when it exceeds 55 to 60 dBA. Sleep disturbance occurs when interior noise levels exceed 40 to 50 dBA. Hearing damage occurs at a level of 90 dBA over an eight-hour period.

Environmental noise fluctuates in intensity with noise, and is typically described by a time-averaged noise level. Several descriptors of noise are available. The two used here are Ldn and CNEL. Ldn, the day-night noise level, is an index based on a 24-hour average of the energy content of the noise, with a 10-dBA "penalty" added for nighttime noise (10:00 p.m. to 7:00 a.m.) to account for the greater sensitivity to noise during these periods. CNEL, the Community Noise Equivalent Level, is similar to the Ldn, but adds an additional 5-dBA penalty to evening noise (7:00 p.m. to 10:00 p.m.). In practice, Ldn and CNEL descriptions of the same noise sources usually differ by less than two dBA.

NOISE LEVELS

Noise levels at the project site exhibit contours parallel to I-80, ranging from in excess of 75 dBA CNEL along I-80 to less than 60 dBA CNEL in the western portion of the Meadow./1/ The 75-dBA CNEL contour is located about 100 feet from the freeway right-of-way; the 70- to 75-dBA CNEL zone is about 200 feet wide; the 65- to 70-dBA CNEL zone is about 400 feet wide; and the 60- to 65-dBA CNEL zone is about 850 feet wide. The 60- to 65-dBA CNEL zone also includes strips alongside University Avenue and Marina Boulevard. During frequent times of relatively high westerly winds (in excess of 15 mph), noise levels on the west side of I-80 are 5-10 dBA lower than they are on a calm day. This effect was included in the above estimates.

NOISE REGULATIONS AND PLANNING GUIDELINES

California Administrative Code (CAC) Title 25 requires that for multi-unit residential buildings (including hotels, motels, apartments, and dwelling units other than single-family detached units), the annualized interior CNEL not exceed 45 dBA. Such residential buildings proposed for sites having an existing exterior CNEL of 60 dBA or more must be analyzed to ensure that the structures would effectively reduce exterior noise levels to an interior CNEL of 45 dBA or less.

The City of Berkeley's Noise Element of the Master Plan (1977) establishes Land Use Compatibility Guidelines for Community Noise which are shown in Table III-4. The on-site noise levels were evaluated in light of these Guidelines, as discussed below./1/

Over 75-dBA Ldn: Development within this zone should be discouraged. Industrial uses would be possible, but other uses would require extensive acoustical isolation.

70- to 75-dBA Ldn: Office, commercial, and professional uses could be developed, with acoustical isolation such as fixed glazing (possibly sound-rated), and mechanical ventilation. Development of residential uses is possible but would require extensive acoustical isolation.

60- to 70-dBA Ldn: All types of use could be developed. Residential uses would require fixed windows and mechanical ventilation.

Under 60-dBA Ldn: All uses could be developed with no special acoustical treatment.

The degree of noise reduction required for particularly noise-sensitive uses, such as residential, could be reduced by locating such uses farther from I-80 and constructing other buildings, containing less noise-sensitive uses, between them and I-80. The degree of shielding provided would depend on the buildings' height and spacing. Shielding can also be provided by constructing landscaped berms or sound walls./1/

NOTE - Noise

/1/ Hall Goodhue Haisley and Barker, Environmental Reconnaissance of the Berkeley Waterfront, prepared for the Santa Fe Land Improvement Company, November 22, 1982.

TABLE III-4: LAND USE COMPATIBILITY GUIDELINES FOR COMMUNITY NOISE IN BERKELEY

Land Use Category	Community Noise Exposure Category/a/			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential-Low Density Single Family, Duplex, Mobile Homes	up to 60	55 - 70	70 - 75	75+
Residential-Multi Family	up to 65	60 - 70	70 - 75	75+
Transient Lodging- Motels, Hotels	up to 65	60 - 70	70 - 80	80+
Schools, Libraries, Churches, Hospitals, Nursing Homes	up to 70	60 - 70	70 - 80	80+
Auditoriums, Concert Halls, Amphitheatres	--	up to 70	--	65+
Sports Arena, Outdoor Spectator Sports	--	up to 75	--	70+
Playgrounds, Neighborhood Parks	up to 70	--	67.5 - 75	72.5+
Golf Courses, Riding Stables, Water Recreation, Cemeteries	up to 75	--	70 - 80	80+
Office Buildings, Business Commercial and Professional	up to 70	67.5 - 77.5	75+	--
Industrial, Manu- facturing, Utilities, Agriculture	up to 75	70 - 80	75+	--

/a/ Noise levels under each category are given in dBA, Ldn.

SOURCE: City of Berkeley Planning Department, The City of Berkeley Master Plan, 1977, p. 174.

F. REGULATORY CONTEXT

Because of the project area's location on the San Francisco Bay shoreline, and its composition of both filled historic tidelands and submerged lands, various agencies have regulatory authority or review responsibilities for any proposed development in order to protect the many beneficial uses of the shoreline and Bay waters. The objectives and authorities of relevant agencies are outlined below.

BAY CONSERVATION AND DEVELOPMENT COMMISSION (BCDC)

BCDC is the primary regional agency with jurisdiction over Bay shoreline and tidelands. The McAteer-Petris Act created BCDC in 1965 and authorized the San Francisco Bay Plan, adopted in 1969, as defined in Government Code Section 66610. The Act gave BCDC permit authority over fill in the Bay waters up to the "line of highest tidal action," and over the uses in a 100-foot shoreline band extending around the Bay and into some tributaries.

BCDC permit action is guided by two key objectives: 1) to protect the Bay as a great natural resource for the benefit of present and future generations, and 2) to develop the Bay and its shoreline to their highest potential with a minimum of Bay filling./1/ Bay Plan policies emphasize providing public access to the shoreline and Bay, providing for water-related uses (industry, ports, marinas etc.) and protecting the Bay's natural resources. BCDC enforces maintenance of existing tidal marshes, mudflats, water volume and fresh water inflow.

In the project area the line of highest tidal action is 8.6 feet MLLW (mean lower low water) datum./2/ A permit is required for any fill and development proposed within the 100-foot shoreline band. The Bay Plan, on Map 4, designates a strip along the west-facing shoreline from Albany to Emeryville for a waterfront park and beach./3/ Emeryville Crescent is labeled as a proposed Wildlife Area, and policy regarding the Albany mudflats states that public access to offshore shellfish beds should be provided and protected. Interstate 80 is designated a scenic road. The plan recommends developing public and commercial recreation along the waterfronts of Albany, Berkeley and Emeryville. The Meadow area is designated as Commercial Recreation.

The Plan notes on Map 4 that "some fill may be needed to create usable shoreline areas, protected water areas and park space." Certain fill proposals for the Berkeley Waterfront area may be in accord with the Bay Plan and could be approved if the fill is the minimum necessary to achieve its purpose and meets one of the following four criteria:

- 1) the filling is in accord with the Bay Plan policies as to the Bay-related purposes for which filling may be needed (e.g. ports, water-related industry, and water-related recreation) and is shown on the Bay Plan maps as likely to be needed; or
- 2) the filling is in accord with Bay Plan policies as to purposes for which some fill may be needed if there is no other alternative (e.g., airports, roads, and utility routes); or
- 3) the filling is in accord with the Bay Plan policies as to minor fills for improving shoreline appearance or public access; or

- 4) the filling would provide, on privately-owned property, for new public access to the Bay and for improvement of shoreline appearance -- in addition to what would be provided by the other Bay Plan policies -- and the filling would be for Bay-oriented commercial recreation and Bay-oriented public assembly purposes. BCDC can issue permits under this criterion provided that several more specific provisions identified in the Plan are satisfied.

U.S. ARMY CORPS OF ENGINEERS (COE)

COE requires permits for all projects in or affecting the tidal waters of San Francisco Bay. COE regulates development within its permit jurisdiction by requiring a permit for:

- 1) diking, filling, or placement of structures (works) in navigable waterways (including historic waterways), and
- 2) disposal of dredged or fill material into "waters of the United States", below the high-tide line in tidal waters and below the ordinary high-water mark in non-tidal waters.

COE's authority in the Baylands stems chiefly from: 1) the River and Harbor Act of 1899 (Sections 9 and 10); 2) the Federal Water Pollution Control Act (Clean Water Act) and Amendments of 1977 (Section 404). Permit applications can fall under either of these two authorities (Section 10 or 404), and often both. Applications are evaluated on a case-by-case basis through a Public Notice procedure. Further responsibilities of COE regarding Bay projects are outlined in the Fish and Wildlife Coordination Act of 1958, revised in 1979; Estuarine Areas Act of 1968; Endangered Species Act of 1973; and Executive Orders concerning wetlands and floodplain management.

Based on a Memorandum of Understanding between the Secretary of the Interior and the Secretary of the Army, the COE District Engineer must "...coordinate with the U.S. Fish and Wildlife Service and National Marine Fisheries Service on fish and wildlife matters associated with dredging and filling operations. COE also considers California Department of Fish and Game advice on permits and the conditions of permits, pursuant to the Fish and Wildlife Coordination Act.

Up until 1968 COE did not actively enforce Section 10 regulations. Under a nationwide "grandfather clause," fill work in progress was given blanket authorization until December 1968./4/ Almost all the filled areas constituting the present Berkeley Waterfront were completed before 1968. Development on these fill sites would not require further COE permit authorization./1/ However, any dredging, fill (e.g. to establish new beaches), or structures extending into the Bay (e.g. piers) proposed would require a COE permit.

U.S. FISH AND WILDLIFE SERVICE (USFWS)

The USFWS does not have direct permit authority but carries out basic responsibilities for migratory birds, fish, waterfowl, marine mammals, and endangered species. Under the Fish and Wildlife Coordination Act (1958), the USFWS reviews federally permitted, funded, or constructed projects with the goal of protecting, and where possible enhancing, the fish, wildlife, and natural values of waters and related wetlands. The USFWS actively discourages activities and developments which would individually or cumulatively

unnecessarily destroy, damage, or degrade these resources. The Ecological Services Branch of the USFWS would review the proposed Berkeley Waterfront development plans through COE's Public Notice Process. The USFWS would most likely be concerned about development plans that might affect the existing mudflats and be interested in any plans for habitat enhancement.

NATIONAL MARINE FISHERIES SERVICE (NMFS)

The NMFS, like the USFWS, reviews federally permitted projects that could alter aquatic environments or their biological resources. Under the U.S. Fish and Wildlife Coordination Act 1958, NMFS would comment on any COE permit required.

CALIFORNIA DEPARTMENT OF FISH AND GAME (CDFG)

The California Fish and Wildlife Plan (1966, in revision), states the CDFG's overall objective: "to maintain all species of fish and wildlife for their intrinsic and ecological values and for their direct benefit to man." The CDFG has authority to regulate or comment on state or federal activities that may affect fish and wildlife resources under: 1) Public Resources Code; 2) Fish and Game Code; 3) the Subdivision Map Act; 4) the California Environmental Quality Act; 5) the Coastal Zone Management Act; and 6) the federal Fish and Wildlife Coordination Act (1958).

CDFG would comment on any COE, BCDC, Regional Water Quality Control Board, or State Lands Commission permits. CDFG provides the state's viewpoint on fish and wildlife resources when reviewing permit applications and environmental studies. Under the State Subdivision Map Act, the Department cannot approve of development that would have a significant detrimental impact on wildlife habitat.

In addition, the San Francisco Bay Management Guidelines, adopted by CDFG in 1979, are strictly adhered to in the evaluation of any project which might adversely affect fish and wildlife values. CDFG would share concerns with the USFWS over possible disturbance of existing on-site habitats, particularly the valuable mudflats, and proposals for habitat enhancement.

STATE LANDS COMMISSION (SLC)

The SLC has permit authority over tidal and submerged lands and unfilled, historic tidelands. California became the owner of the majority of the tidelands within its borders when it was admitted to the Union in 1850. Most of California's tidelands are still owned by the State or the legislature's public grantees in trust under the jurisdiction of the State Lands Commission (SLC).

Also in 1850 the federal government granted "swamp and overflow lands" to California. Most of the land was sold or "patented" to private citizens for the purpose of agricultural reclamation, much of it in the Sacramento - San Joaquin Delta. The "swampland" which was sold off during the ensuing thirty years included both navigable tidelands and submerged lands.

Under the 1879 revision of the California Constitution, tidelands and submerged lands were to be held in public trust for "commerce, navigation and fisheries." California courts have expanded this common-law public trust doctrine: Marks vs. Witney in 1971 interpreted the public trust easement to encompass recreation and preservation of tidelands as ecological units as

well. In most cases, the public trust doctrine applies to the lands conveyed to private owners by the State as well as to State-owned lands.

In 1980, the California Supreme Court decided that filled lands were exempt from trust restrictions to the extent that they are free from tidal action, though they are still subject to public access easements. This applies to all the land parcels in the project area. Authority to administer the State's Public Trust doctrine for projects involving tidelands along Berkeley's Waterfront was granted to the City of Berkeley by the State legislature in 1967./5/ The City must find that development plans are consistent with conditions of the grant regarding public trust easement.

REGIONAL WATER QUALITY CONTROL BOARD - SAN FRANCISCO REGION (RWQCB)

The State Water Resources Control Board and nine Regional Boards were designated in 1973 to exercise powers set forth in the Federal Water Pollution Control Act Amendments (FWPCAA), and later the Clean Water Act (CWA, 1972). The Boards are also responsible for exercising powers contained in the State Porter-Cologne Water Quality Control Act, amended 1969.

The RWQCB, acting on behalf of the State Water Resources Board, has both advisory and permit authority in Bayfront projects which may affect water quality. Development of the Berkeley Waterfront would require RWQCB certification as part of any COE permit application under Section 404 of the Clean Water Act. COE cannot approve projects until the RWQCB either waives certification or requires certification to correct any potential water quality problems.

In the project area the primary water quality concern is for all landfill areas to be properly "closed" to prevent any seepage of material or leachate to the Bay. Usually, for profuse landfills like the Meadow or North Basin Strip which are considered Class II landfills, the RWQCB would issue Waste Discharge Requirements to govern their operation and closure. However, these landfills were completed prior to the formation of the RWQCB. In a meeting in May 1984, the RWQCB determined that the Meadow and North Basin Strip would have to be closed in accordance with their regulations for Class II landfills./6/ The Brickyard, filled with construction debris, is considered a Class III facility and does not require closure. The RWQCB would require that a site closure plan be submitted for approval in accordance with RWQCB Resolution 77-7 Minimum Criteria for Proper Closure of Class II Solid Waste Disposal Sites. New regulations (in California Administrative Code, Title 23, Chapter 3, Subchapter 15, Article 8) were adopted in May 1984 and are currently being reviewed by the state Office of Administrative Law. Development cannot proceed in the project area until the RWQCB certifies that all landfills in question have been properly closed.

NOTES - Regulatory Context

/1/ Bay Conservation and Development Commission (BCDC), San Francisco Bay Plan, 1969.

/2/ Hall Goodhue Haisley and Barker, Environmental Reconnaissance of the Berkeley Waterfront, November 22, 1982.

/3/ BCDC, Bay Plan, 1969.

/4/ Vicky Reynolds, U.S. Army Corps of Engineers, telephone conversation, January 11, 1985.

/5/ Mike Valentine, State Lands Commission, telephone conversation, January 14, 1985.

/6/ Harding Lawson Associates, Preliminary Landfill Closure Plan, Santa Fe Land Improvement Company Berkeley Waterfront Project, Berkeley, California, San Francisco, August 16, 1984.

IV. Visual Resources

ROMA

BERKELEY WATERFRONT PLAN

VISUAL RESOURCES

Prepared by ROMA Design Group

January 22, 1985

VISUAL RESOURCES

CITY POLICY AND PREVIOUS VISUAL STUDIES

Existing policies and previous analyses provided the starting point for the current evaluation of the visual setting of the Berkeley waterfront. These were derived from documents prepared for the Berkeley City Council, the California State Coastal Conservancy and Santa Fe Land Improvement Company.

Adopted City Objectives

On January 17, 1984, the Berkeley City Council endorsed preliminary goals and policies for the protection, maintenance and enhancement of the quality of waterfront resources. The following sections directly address their concerns for visual quality¹:

- 2.4 Protect and enhance view corridors and vistas from the waterfront both towards the Bay and the Berkeley Hills.
- 2.6 Use natural screening to buffer the impact of the freeway, major arterials and parking facilities from outdoor areas for recreation and pedestrian and bicycle circulation.
- 2.7 Use building in the North Basin area to buffer the shoreline from the freeway.
- 2.8 Ensure that any structures allowed are of limited height, appropriate to the existing structures and topography of the waterfront area.

In the 1977 Berkeley Master Plan, various roads, including University Avenue and Interstate 80, are identified as having scenic character. The following policy section addresses this issue²:

- 2.20 Along designated scenic routes, undertake efforts to:
 - a) develop supplementary tree planting and landscaping;
 - b) conserve, enhance and protect scenic views observable from the routes; and c) provide, where possible, recreational uses, roadside rests and observation points.

Coastal Conservancy Visual Analysis

The Coastal Conservancy, with the East Bay Shoreline Advisory Committee, addressed their concerns for meeting the shared goals of the City and State in their Discussion Paper dated January 16, 1984. In that analysis, significant views to be protected were divided into primary and secondary views³:

Primary Views - Views of the open Berkeley Hills (above 800 feet elevation) from the waterfront and views from the hill parks to the waterfront.

Secondary Views - Views of the waterfront from the Berkeley residential hills, Claremont Hotel, etc. (above 400 feet).

The view analysis recommended preservation of primary views from the Meadow and the water, and preservation of both primary and secondary views to and from North Waterfront Park and the South Sailing Basin.

The conclusions of the Coastal Conservancy analysis were that development should be limited to a 400 to 600-foot wide zone adjacent to the freeway, and should be a maximum of 40' in height, with the possible exception of the Horse Barn area.

Santa Fe Land Improvement Company Visual Analysis

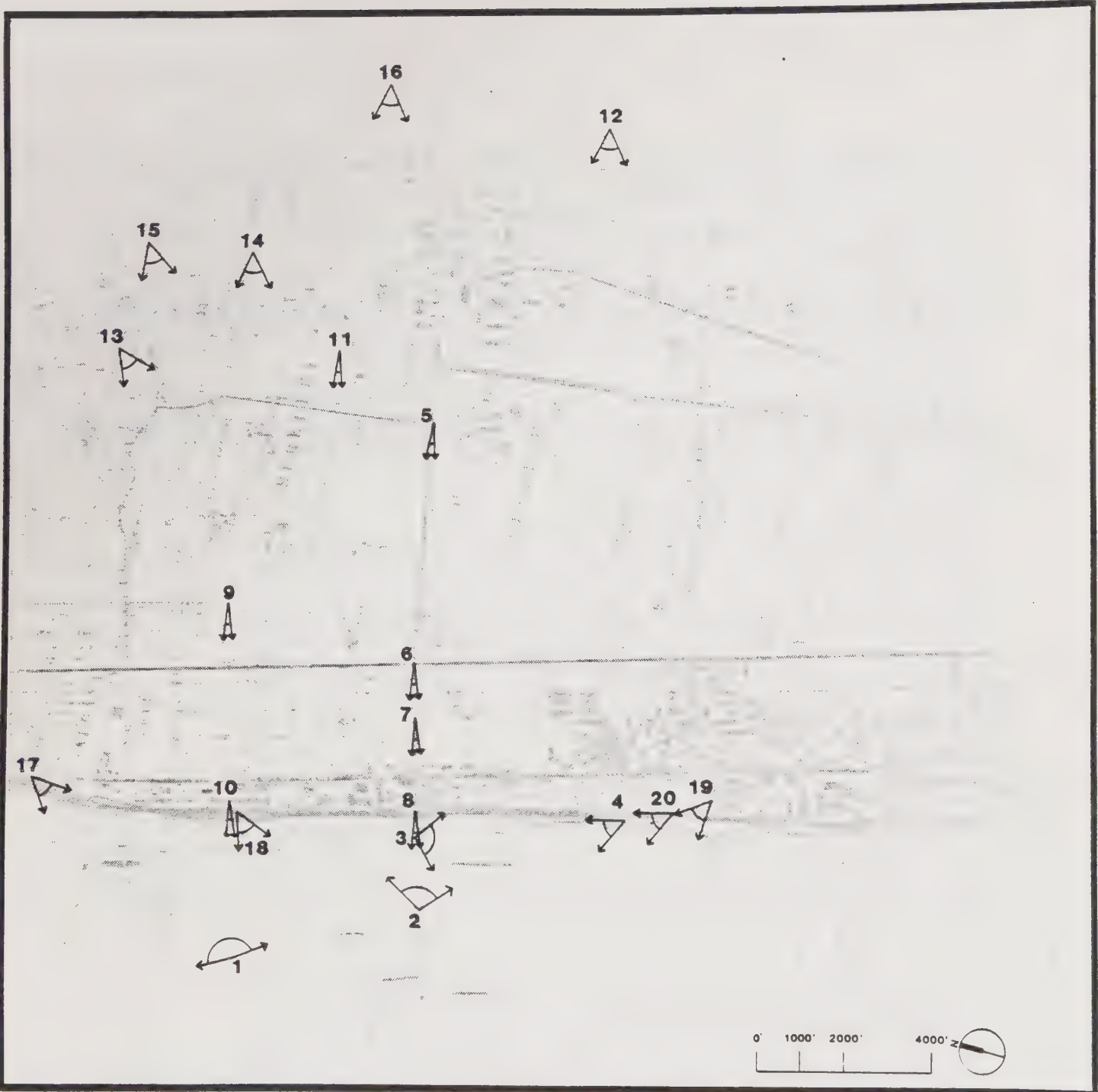
The property owner's visual analysis was focused primarily on views from hill-side vista points and views from scenic highways. Views from the hills were divided into impact zones by elevation of view point. One view from each impact zone in the hills was used to represent typical views from that area. The Santa Fe analysis assumed that the critical factor in determining visual sensitivity was blockage of views to the San Francisco skyline, the bridges, and the Marin hills. It concluded that this would occur if development exceeded 15 stories in height.

A notable difference from the Coastal Conservancy study was the lack of mention of views from the site and North Waterfront Park eastward to the Berkeley hills. Conversely, the Santa Fe analysis did include consideration of views from scenic highwys, which the Conservancy did not. The locations which were determined to provide key bay views include: Gilman Overpass, University Avenue Overpass, University Avenue Visual Corridor, Interstate 80 Southbound Lane, and Frontage Road south of the Brickyard.⁴

VISUAL SETTING




Purpose of Current Visual Analysis

The following discussion is directed towards a refinement of the adopted preliminary policies, to establish criteria for evaluating visual impacts of development on the waterfront. The criteria can then be used in comparing the visual impact of various conservation and development alternatives.



LOCATIONS OF KEY VIEWS

Figure IV-1

- Legend**
-  **View Point**
 -  **View Corridor**
 -  **View Panorama**

BERKELEY WATERFRONT PLAN

ROMA	Anthony/Fleming Associates	ESA-Madrone	DKS Associates	McGuire and Company	PAD	Wilson-Porter
Planning and Urban Design	Community Involvement	Environmental Assessment	Transportation	Market and Fiscal Analysis	Social Analysis	Civil Engineering

The views were categorized into three types (see Figure 1 for locations):

1. Panoramic views from the site.
2. Views from the City of Berkeley.
View corridors.
Views from the Hill Parks.
3. Views from the Freeway.

Site Features and Views from the Site

The Berkeley waterfront is bounded by Interstate 80 to the east, Golden Gate Fields to the north, San Francisco Bay to the west, and the Ashby Interchange to the south. The "Y" shape of the land extending from the linear portion of the waterfront creates extensive frontage along the Bay, permitting many views across open water to the natural land forms of Angel Island and Mount Tamalpais, as well as significant man-made features such as the Golden Gate Bridge and the San Francisco skyline. The visual connection between the waterfront and the city of Berkeley is tenuous. Interstate 80 and the industrial zone to the east of the freeway form the major impediments to visual access.

The visual character of the site is expansive due to the flatness of the topography, the existence of few vertical elements, such as trees or buildings, and the proximity of water, which almost surrounds the site. Because the topography is flat, relatively minor differences in elevation can create dramatic view points. North Waterfront Park, in particular, affords a panoramic view from the hilltop (approximately 70-foot elevation). The Meadow is not high enough to provide any significant view points except along the water's edge. The mounds of rubble at the Brickyard site are high enough to provide panoramic views of open water, although this is somewhat marred by foreground debris and scrub vegetation.

The Frontage Road along Berkeley Beach provides unimpeded views across the Bay to the distant landscape. The drama is enhanced by the roadway location adjacent to the riprap revetment, which is perceived as being right at the water's edge. The western edge of Shorebird Park is a popular spot for watching the sunset because here, too, there are no foreground elements to obscure the views across the water to major natural land forms.

The following panoramic views were chosen to illustrate views from the site to the city and other areas of the site. Viewing angles were chosen which would be most sensitive to the impacts of potential development on the site: (refer to Figure 2).

1. View from North Waterfront Park to Berkeley.

This view looks across North Basin to the North Basin Strip and to the hills in the background, encompassing Richmond to the north and the Piedmont Hills to the south.

2. View east from University Avenue to the Meadow, the Hills and the Brickyard.

The view up University Avenue looking back to Berkeley from the site is an important unifying element between city and the site.

3. View from University Avenue to the Brickyard.

At the foot of the overpass, upon entering the site, the 180-degree view opens up to the motorist. This shows the portion of the view to the Brickyard. The Bay Bridge is visible in the background.

4. View to the Brickyard and the Marina from the Frontage Road.

The view from the Frontage Road looking north to the site is one of the only places providing an overall view of the site encompassing the Marina, the Meadow, and the Brickyard.

Views from the City of Berkeley

Views from the city were divided into two categories: View Corridors, which are views down major east-west streets focusing on a single portion of the waterfront; and Views from the Hills, which are views from public parks and overlooks to the waterfront. These categories were chosen because they provide exposure to the largest segment of Berkeley residents.

View Corridors (refer to Figure 3)

The major visual link from the city of Berkeley to the waterfront is along University Avenue, historically the link between the city center and the waterfront. At Martin Luther King Jr. Way, there is a view down University to the Marina, with Angel Island framed in the distance (see photos 5 and 6).

At the lower elevations of the city, most views of the waterfront (including the corridor along University Avenue) are blocked by the height of the freeway structure (see photo 7). The view opens up again from the top of the University Avenue overpass (see photo 8). View corridors also occur down Gilman and Cedar (see photos 9 and 11). At Cedar, the view from the lower elevations is blocked by the freeway structure, while at Gilman, the view opens up under the overpass (see photo 10).

Of the view corridors, the one along University Avenue is considered the most significant, due to the volume of traffic and its axis with the site. The Gilman corridor is also important because of the visual access under the freeway. The Cedar view corridor is of lesser importance because the connection to the waterfront exists only at higher elevations and is blocked at the lower elevations.

Views from the Hills (refer to Figure 4)

The site is also visible from elevations above 400 feet or so in the Berkeley Hills. However, from this distance and perspective, the prominence of the Bay itself, and of major regional features surrounding the Bay (Angel Island, Mount Tamalpais and San Francisco), overpower the Berkeley waterfront (see photos 13, 14, 15 and 16). The potential impact to these views is more the possible obscuring of the bay itself than the obscuring of Waterfront lands.

Views from the Freeway

As the most heavily traveled traffic route in the vicinity, Interstate 80 provides the major regional perspective of the waterfront site. Along this route, the freeway is at the same elevation as the waterfront, except at the Ashby, University, Gilman and Buchanan interchanges.

Views of the water to the northbound motorists are obscured by freeway divider fences along the Berkeley Beach area and by landscaping further north (see Figure 5, photo 20). From the northbound Ashby on-ramp, which is elevated (see photo 19), there is a glimpse of open water over the fence. The southbound motorist has a few brief glimpses of the waterfront from the Albany and Gilman overpasses (see photos 17 and 18). Moving southward, the view is blocked by freeway landscaping until south of University Avenue to the Ashby interchange, where the most dramatic view of San Francisco Bay from Interstate 80 is opened. However, here again, the view is somewhat marred by the freeway fence in the foreground and the fact that much of the visual drama is perpendicular to the driver's line of vision.

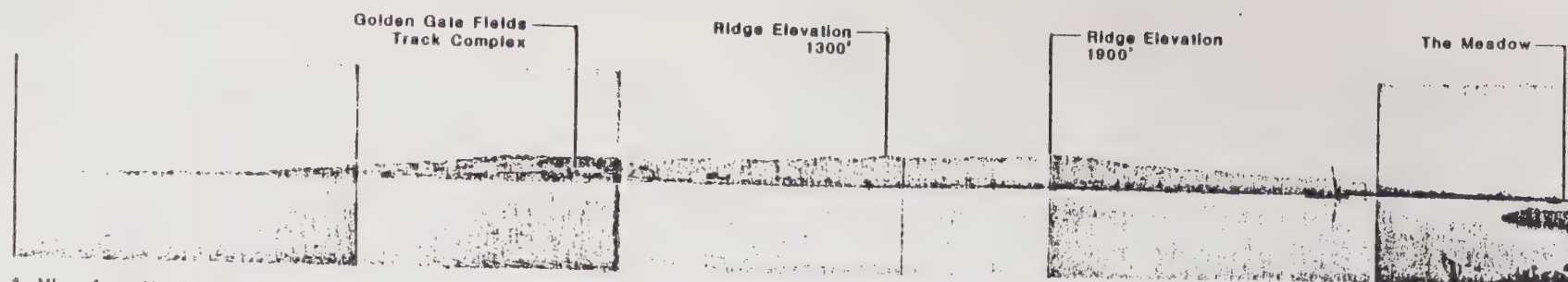
Caltrans has proposed lane widening for Interstate 80 along this stretch. This should not affect the visibility of the site significantly because the elevations are basically the same. However, where freeway landscaping is removed to accommodate the lane addition, some views may be opened up.

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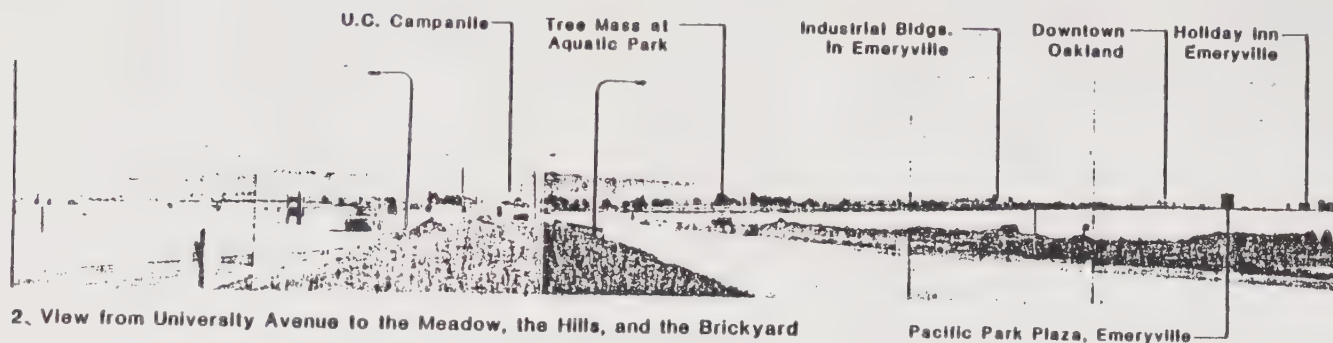
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1. Preliminary Goals and Policies, endorsed by Berkeley City Council, January 17, 1984, page 13.
 2. The City of Berkeley Master Plan, adopted June 1977, Comprehensive Planning Department, Berkeley, California, page 30.
 3. Proposals for the Berkeley Waterfront: A Framework for Site Planning, by the State Coastal Conservancy with the East Bay Shoreline Advisory Committee, January 16, 1984.
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Panoramic Views from the Site

Figure IV-2



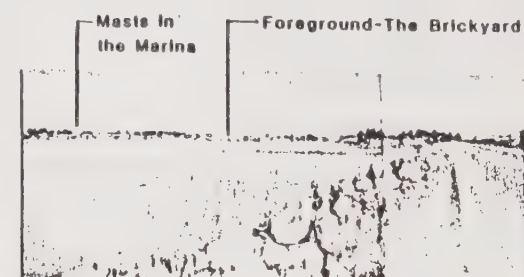
1. View from North Waterfront Park to Berkeley



2. View from University Avenue to the Meadow, the Hills, and the Brickyard



3. View from University Avenue to the Brickyard



4. View to the Brickyard and the Marina from the Frontage Road

Figure IV-3

Views from Berkeley

View Corridors

5. University at M. L. King

Approximate elevation 270'

The view is focused on the masts in the Marina with the Bay, Angel Island and Marin Headlands in the background.



6. University at San Pablo

Approximate elevation 50'

The view is focused on the Marin Headlands. The Bay is no longer visible, blocked by the University Avenue overpass.



7. University at 7th

Approximate elevation 25'

University Avenue overpass is now the focus of the view. All views of the Bay and surrounding land forms are blocked.



8. University at Overpass

Approximate elevation 30'

The view is focused on the masts in the Marina. Much of the view to open water is blocked by freeway landscaping. The Marin Headlands in the background are visible over the treetops.



Figure IV-3 (cont.)

9. Gilman at Santa Fe Street

Approximate elevation 75'

The focal point of the view is the North Basin parking lot, with the Bay and the Marin Headlands in the background.

View Corridors



10. Gilman at East Frontage Road

Approximate elevation 10'

A window to the North Basin parking area is created under the freeway. The view point is level with the site, so open water is blocked by the ground plane and foreground landscaping. The Marin Headlands are visible in the background.



11. Cedar at Shattuck

Approximate elevation 240'

The view is focused on the Bay, North Waterfront Park and the North Basin area. The Marin Headlands are visible in the background.



12. California School for the Deaf and Blind

Approximate elevation 460'

From this view point the site is centered below Angel Island. A large expanse of open water is visible. Mt. Tamalpais is a key orienting feature.

Views from Hill Parks



Figure IV-4

Views from Hill Parks

13. View from Indian Rock Park

Approximate elevation 380'

Most of the site is visible below the San Francisco skyline. The Bay Bridge and Treasure Island are also visible to the left of the site. Foreground elements restrict visibility to the North Basin Strip.



14. View from the Rose Garden

Approximate elevation 480'

North Waterfront Park is framed by the trees from this view point. The Bay and the Marin Headlands encompass most of the background. Foreground elements restrict the view to the Brickyard and Shorebird Park, even from this elevation.



15. View from Cragmont Park

Approximate elevation 800'

Foreground elements do not impact this view. The entire site is visible from this view point. Most of the background is comprised of open water framed by Treasure Island, San Francisco, the Golden Gate Bridge, and Marin Headlands.



16. View from Lawrence Hall of Science Overlook

Approximate elevation 1,100'

From this elevation foreground elements do not generally impact views. This view is essentially the same as the Cragmont Park view except even more open water is visible from this elevation.



Figure IV-5

Views from the Freeway

17. I-80 Southbound

Approximate elevation 50'

View from the Buchanan Street overpass opens out to the higher elevations of North Waterfront Park. Freeway landscaping restricts view of Golden Gate Fields and the Meadow from this perspective.



18. I-80 Southbound

Approximate elevation 35'

View from the Gilman Street overpass looks across the Golden Gate Fields parking area. The Meadow and North Waterfront Park are visible in the middle ground. San Francisco and the Bay Bridge are visible in the background.



19. I-80 Northbound Ashby On-Ramp

Approximate elevation 20'

The on-ramp is elevated slightly, providing views over the divider fence along Berkeley Beach to the site beyond. Marin Headlands are visible in the background.



20. I-80 Northbound at Ashby

Approximate elevation 10'

As the on-ramp reaches the elevation of the freeway, the view is obscured by the freeway divider fence.



V. Utilities

BERKELEY WATERFRONT PLAN

UTILITY SETTING

SECTION V

Wilson & Porter Engineering

January 15, 1985

I EXISTING SETTING

V) UTILITIES

A. SANITARY SEWER

Sanitary sewer service in the Berkeley waterfront area is currently provided by a combination of the City of Berkeley and the East Bay Municipal Utility District (EBMUD). The City owns and maintains the sewer line network throughout the City of Berkeley collecting sewage and emptying it into EBMUD's Facilities. EBMUD, a regional district, provides sewage treatment services for all of Alameda and Contra Costa Counties including the City of Berkeley. The City of Berkeley's lines currently collect all sanitary sewage generated west of Interstate 80 and discharge it in EBMUD's main interceptor line on the east side of Interstate 80 near University Avenue. EBMUD's interceptor line extends through Berkeley, parallel to the Bay, to the treatment plant located at the east end of the Bay Bridge as shown in Figure 1.

The City's sanitary sewage facilities supporting the waterfront area extend west from EBMUD's interceptor with a 16 inch line under Interstate 80 to the west side of the freeway. West of the freeway there is an eight inch force main extending west from the 16 inch line along University Avenue to Pump Station No. Five near Marina Boulevard as indicated in Figure 1. From that point another eight inch line continues west in a utility easement south of the marina area providing service to existing development at the southern edge of marina and along Seawall Drive. A second line extends north in Marina Boulevard to the northern edge of the marina and then extends west to the Bay as indicated in Figure 1. The existing sewage facilities in the marina area are currently being upgraded to eliminate sags within the system. When completed, service in the marina area will be provided by a combination of existing eight and 10 and new 12 and 15 inch lines.

The existing network west of the freeway is a combination of pressure and gravity flow systems. The marina area is lower than the interceptor resulting in sewage having to be pumped up to the existing 16 inch line west side of the freeway. From there it flows by gravity under the freeway through the existing 16 inch line to the interceptor. The existing system includes five pumping stations located as shown on Figure 1.

EBMUD's interceptor line consists of a 54 inch line north of University Avenue located in Second Street connecting to two 30 inch pipes extending under University Avenue which in turn connect to a 66 inch line just south of University Avenue which angles over to Bolivar Drive. From that point it continues south between Aquatic Park and Interstate 80 as indicated in Figure 1.

The existing system west of the freeway currently provides adequate service to the waterfront area. The City has stated there is additional capacity in the existing eight inch force main extending west from the frontage road to Pump Station No. Five for future development but that it will be reserved for future development of public lands (1). Development on privately owned lands will be responsible for a second force system to the existing 16 inch gravity line. The existing 16 inch line under the freeway has an excess in capacity of 1.9 cubic feet per second which will be available to future private development (1). This excess in capacity, if used in conjunction with holding

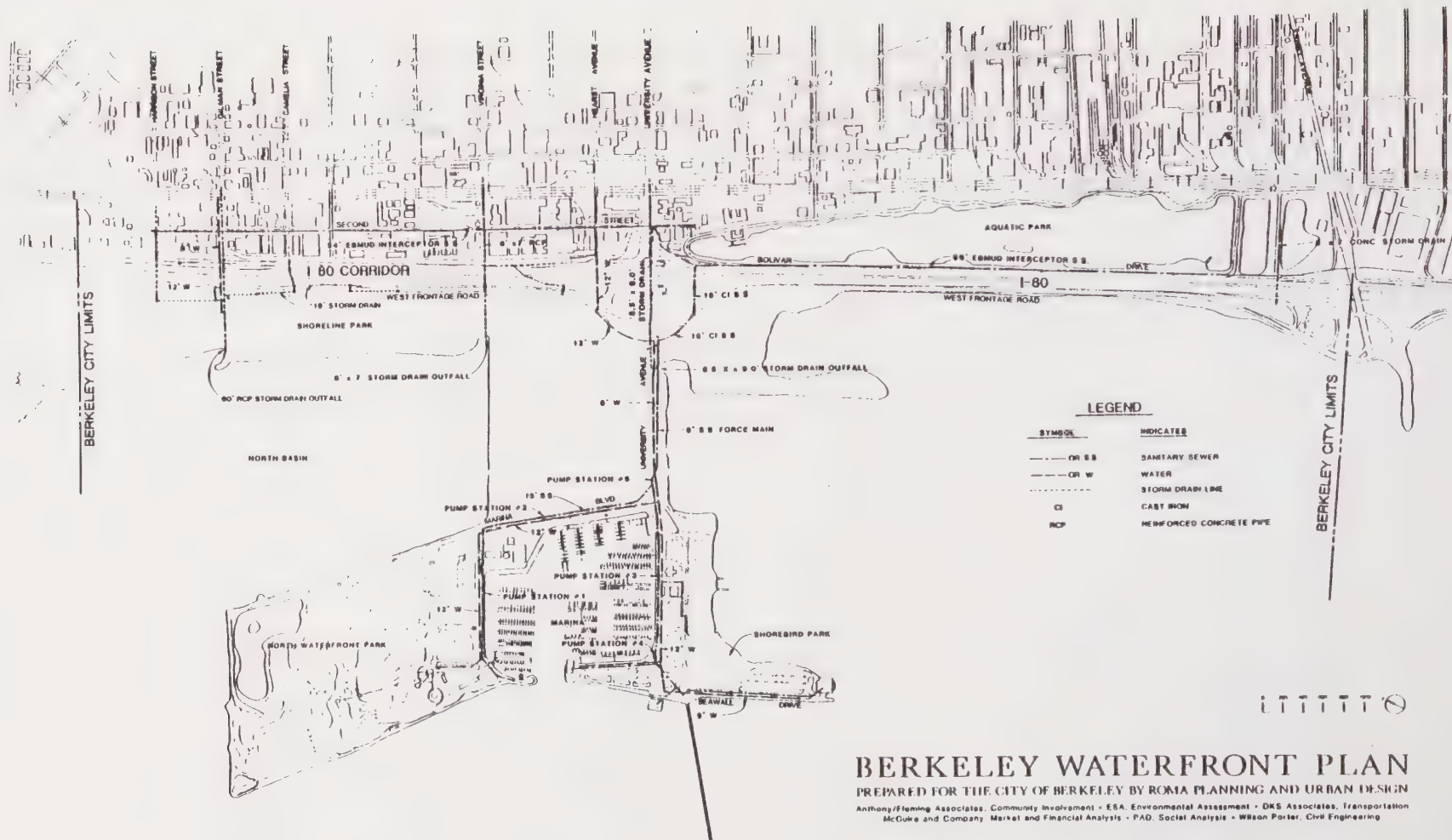


Figure V-1
Existing Sewer, Water and Storm Drain Lines

tanks could probably service a low level of private development at the site. However, a second line under the freeway will probably be required to support a significant level of new development in the waterfront area.

EBMUD's interceptor currently flows approximately half full during dry weather periods but is overflowing during wet weather periods (2). The wet weather problem is caused by a great amount of storm runoff infiltration into sewer lines throughout the East Bay which East Bay MUD's facilities cannot accomodate. The result is that sewer manhole lids are lifted during severe storms along the interceptor just north of University Avenue and in Boliver Drive and raw sewage spills into the streets several times a year. Additionally, the treatment plant which can accomodate approximately 290 million gallons per day (mgpd) (primary treatment) and 168 mgpd (secondary treatment) typically handles approximately 75 mgpd during dry periods but is at or over capacity during wet weather periods. An area wide infiltration and inflow study is currently being conducted with the aim of indentifying problems and solutions. However, the results are not yet available. The existing interceptor can accomodate an intense level of development in the waterfront area during dry weather periods but is already flowing full during wet weather periods (2). EBMUD will allow full use of the existing 16 inch connection to the interceptor for future development but additional connections will probably have to be reviewed by the EBMUD Board of Directors (2). Engineers at EBMUD feel that an eight inch connection will probably be allowed, a 12 inch connection might be allowed and a 24 inch connection will probably not be allowed. However, actual connections allowed will depend upon not only the size but also the type of development anticipated. Different types of development have different peaking characteristics which will affect the size of connection allowed. The following table depicts preliminary estimates of levels of residential or office development which could be supported by available capacity in the existing 16 inch line and a range of additional connections. However, these are very preliminary and must be refined as further information becomes available.

TABLE 1

	Existing Capacity	New 8"	New 12"	New 24"
Residential Dwelling Units	1,100	500	1,500	10,000
Office 1,000 Sq. Ft.	1,300	618	1,800	10,000

B. WATER

EBMUD is responsible for the provision of water in the Berkeley Waterfront Area. They own and maintain the water distribution network and treat and supply all water.

Service to the waterfront area is currently provided by two water lines. A 12 inch line extends west from Hearst Avenue under Interstate 80 and connects with an eight inch line that continues west in University Avenue to the marina area. A second 12 inch line extends under the freeway at Gilman Avenue and

currently ends just west of the freeway as indicated in Figure 1.

The marina area is currently experiencing some fluctuation in water pressure due to lines west of the freeway not being looped or interconnected and EBMUD has stated that they would probably require the lines in Gilman and University Avenues to be looped or connected before significant development can occur (3). In addition, the City of Berkeley Fire Department stated the lines west of the freeway must be looped before the waterfront area can be developed (4). The City has also stated that all new structures west of the freeway must be provided with automatic sprinkler protection for fire control.

EBMUD estimates that a significant level of development could be supported at the waterfront area (2-3 million square feet) with the existing facilities provided the two existing lines are looped or connected. Their primary concern is that fire demand be accomodated which may be possible if the looping is completed and all structures are equiped with sprinklers for fire protection. Recent hydrant tests yielded a pressure of 2,100 gallons per minute (gpm) at the intersection of University Avenue and Marina Boulevard and 2,900 gpm at Gilman Avenue just west of the freeway. Very preliminary estimates indicate that with looping approximately 2,500 to 3,500 gpm should be available west of the freeway (7). The fire department will probably require between 2,000 and 4,000 gpm dependent upon the type of development, assuming all structures are equiped with sprinklers for fire protection (4). EBMUD stated water will be available for any level of development completed in the waterfront area (3).

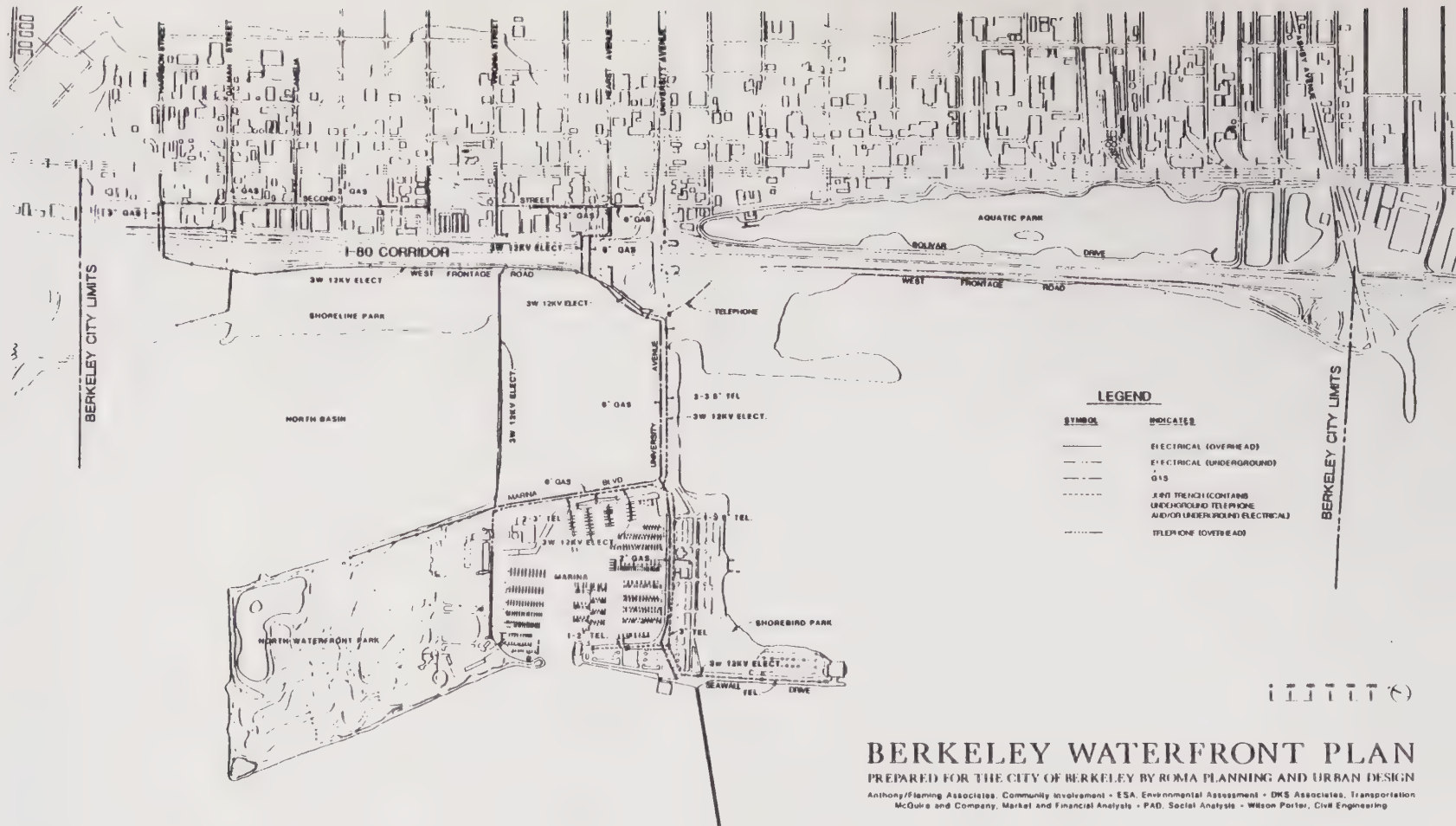
C. GAS

Pacific Gas & Electric (PG&E) is responsible for providing gas service to the Berkeley Waterfront Area. Existing gas facilities in the area consist of a six inch gas line extending west under Interstate 80 just north of Hearst Avenue and then following the frontage road south to University Avenue and then University Avenue west out to the marina. A three inch line extends west under the freeway just north of Gilman Avenue as shown in Figure 2. The six inch line in University Avenue branches at Marina Boulevard with a three inch line extending north in Marina Boulevard to the northern edge of the marina and then orienting west along the northern edge of the marina as indicated in Figure 2. Another three inch line continues west in University Avenue from Marina Boulevard out to the Berkeley Pier. The line just north of Gilman currently ends just west of the freeway with a service connection out to Golden Gate Fields.

The existing gas lines in the waterfront area have sufficient capacity to support a high level of development in the waterfront area exclusive of heavy industrial usage. If heavy industrial usage is anticipated, an in depth study will be necessary to determine required improvements when a specific plan for development becomes available.

D. ELECTRIC

Electric service is provided to waterfront area by Pacific Gas & Electric (PG&E) with a combination of underground and overhead lines. A 12,000 volt system extends accross Interstate 80 just north of Gilman Avenue and then runs southerly, overhead, parallel to the frontage road to Virginia Street. It continues west in Virginia street, overhead, to Marina Boulevard where it turns north for approximately 1,500 feet to the former landfill site. A second



BERKELEY WATERFRONT PLAN

PREPARED FOR THE CITY OF BERKELEY BY ROMA PLANNING AND URBAN DESIGN
 Anthony/Planning Associates, Community Involvement - ESA, Environmental Assessment - DKS Associates, Transportation
 McGuire and Company, Market and Financial Analysis - PAD, Social Analysis - Wilson Porter, Civil Engineering

Figure V-2
Existing Gas, Electric and Telephone Lines

12,000 volt system extends under the freeway at Hearst Avenue to the frontage road where it turns south to University Avenue and extends westerly, underground in University Avenue out to the marina. At Marina Boulevard it branches with one line continuing west in a utility easement south of the marina area and a second turning north in Marina Boulevard to the northern edge of the marina as indicated in Figure 2.

PG&E regulations require that electric service be underground unless the developed area is residential in character with individual parcels being larger than three acres. Existing facilities can remain overhead as long as they are usable in their existing configuration. If relocations are required they must be underground. Therefore if the lines in Virginia Street can be utilized in their existing location they can remain overhead. If relocations are required for development, the lines must be placed underground.

Current service to the waterfront area is adequate to support existing demand. However, the existing system will not be adequate to service a significant level of new development in the waterfront area. The existing system will probably be able to service the area if it is to remain open space with little development but significant upgrading will be required if upwards of 1,000 residential units or a significant amount of commercial or office space is to be developed (5). If significant development is anticipated, a new 21,000 volt system will probably have to be run in from PG&E's Station G in El Cerrito.

E. TELEPHONE

Telephone service to the waterfront area is currently provided by Pacific Bell. The existing system serving the waterfront area consists of lines extending west from the freeway in University Avenue to Marina Boulevard. At that point they branch with lines continuing west in University out to the water and others extending north in Marina Boulevard to the northern edge of the marina where they turn west to the northerly edge of the marina as indicated in Figure 2. A second system is being installed in Gilman Avenue to provide service to the area north of Virginia Street.

The existing system in University Avenue has sufficient capacity to support approximately 5,000 new telephone leads. If this is insufficient for future development, there is additional space available in the existing conduit to stretch additional lines (6).

F. STORM DRAINAGE

Storm drainage in the waterfront area is primarily surface runoff. There is no formal storm drainage system west of the freeway. There are several existing outfalls as shown on Figure 1 but these are for the primary system serving Berkeley proper east of the freeway. There are catch basins in parking areas at developments around the marina which connect to pipes extending underground to the water's edge. However, these are privately owned and are not linked together in a network.

Existing outfalls for lines serving Berkeley east of the freeway are located near University Avenue approximately 1,000 feet west of the freeway, near Virginia Street approximately 600 feet west of the freeway and near Gilman Street approximately 700 feet west of the freeway as shown in Figure 1. The lines currently flow about one half full during wet weather. The outfalls do experience silting and must be dredged every couple of years (7). The outfalls are also submerged during periods of high tide.

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VI. Traffic and Transportation

Berkeley Waterfront Plan Transportation Setting

January 18, 1985

DKS Associates

TRANSPORTATION SETTING

VEHICULAR TRAFFIC

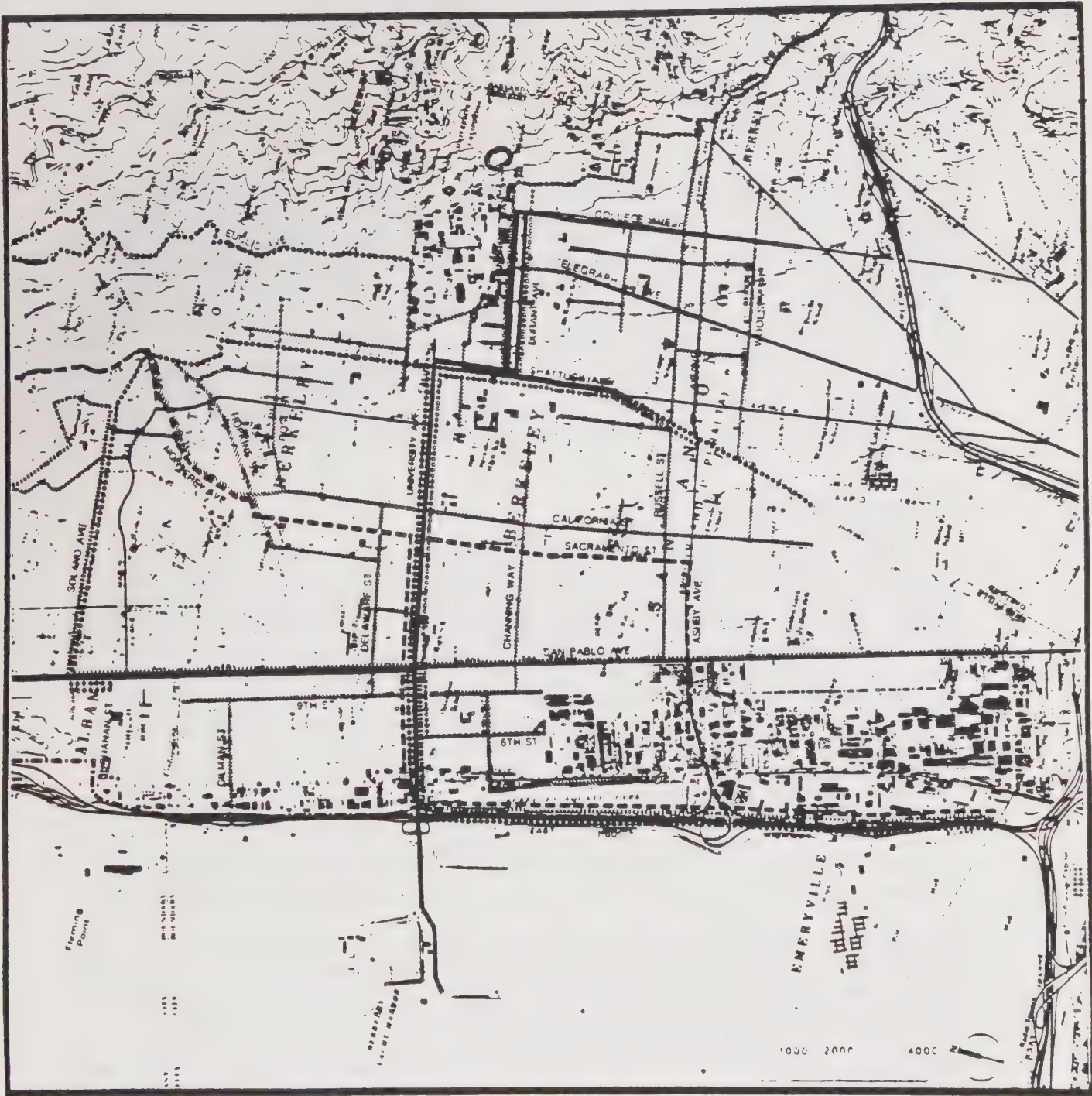
The purpose of this Phase 1 Report for the Berkeley Waterfront Planning Study is to examine how existing transportation conditions, proposed system modifications and future travel demand affect the development potential of the Berkeley waterfront lands. As shown in Figure VI-1, regional and local access to the site are provided via the Gilman Street, University Avenue, Ashby Avenue and Powell Street interchanges with the Eastshore Freeway (Interstate 80/State Route 17 through Berkeley). Since vehicular as well as non-motorized (bicycle/pedestrian/handicapped) access to the waterfront lands is limited to these four locations, the potential of these facilities to handle any additional traffic would be a major factor in determining what type and quantity of development could be accommodated on the site.

Existing Conditions

The Eastshore Freeway. Currently, the Eastshore Freeway has five northbound and four southbound lanes between Powell Street and Ashby Avenue and four lanes in each direction between Ashby Avenue and Buchanan Street (see Figure VI-2). During the morning peak period (7:00-9:00 AM), San Francisco-bound traffic leaving the study site experiences congestion near the Bay Bridge Toll Plaza because traffic demand exceeds the capacity of the Bridge's five westbound lanes. Traffic backs up from the bridge metering lights past the toll plaza to the Distribution Structure (the I-580/SR 17 interchange just east of the toll plaza) and sometimes as far back as Ashby Avenue. Whenever westbound Bay Bridge traffic congestion extends past the Distribution Structure, it creates delays for traffic leaving the site with destinations south on SR 17 (the Nimitz Freeway) and west on I-580. Morning traffic on I-80 approaching the study site from the north experiences congestion at San Pablo Dam Road due to the high volume of traffic entering the freeway at the San Pablo Dam Road on-ramp.

During the afternoon peak period (4:00-6:00 PM), congestion occurs on I-80 northbound between the Bay Bridge Distribution Structure and Ashby Avenue due to the reduction in I-80's capacity from five to four lanes at Ashby Avenue and the influx of traffic from the Ashby Avenue northbound on-ramp. Traffic leaving the site during the afternoon peak period experiences congestion on northbound I-80 from Central Avenue to San Pablo Dam Road due to the lack of adequate freeway capacity at San Pablo Dam Road.

In the immediate vicinity of the Berkeley Waterfront, access is restricted by two existing conditions: the lack of full directional access at the four interchanges serving the site and the consumption of local intersection capacity as vehicles use local streets to avoid freeway congestion. Although all four freeway interchanges (Gilman, University, Ashby and Powell) provide direct waterfront access for traffic approaching



LEGEND

- 51-51A-51M
- M-HX
- - - G-GX
- F-FX-FXX
- 37-37U
- LX
- ~~~~~ Existing Bikeways

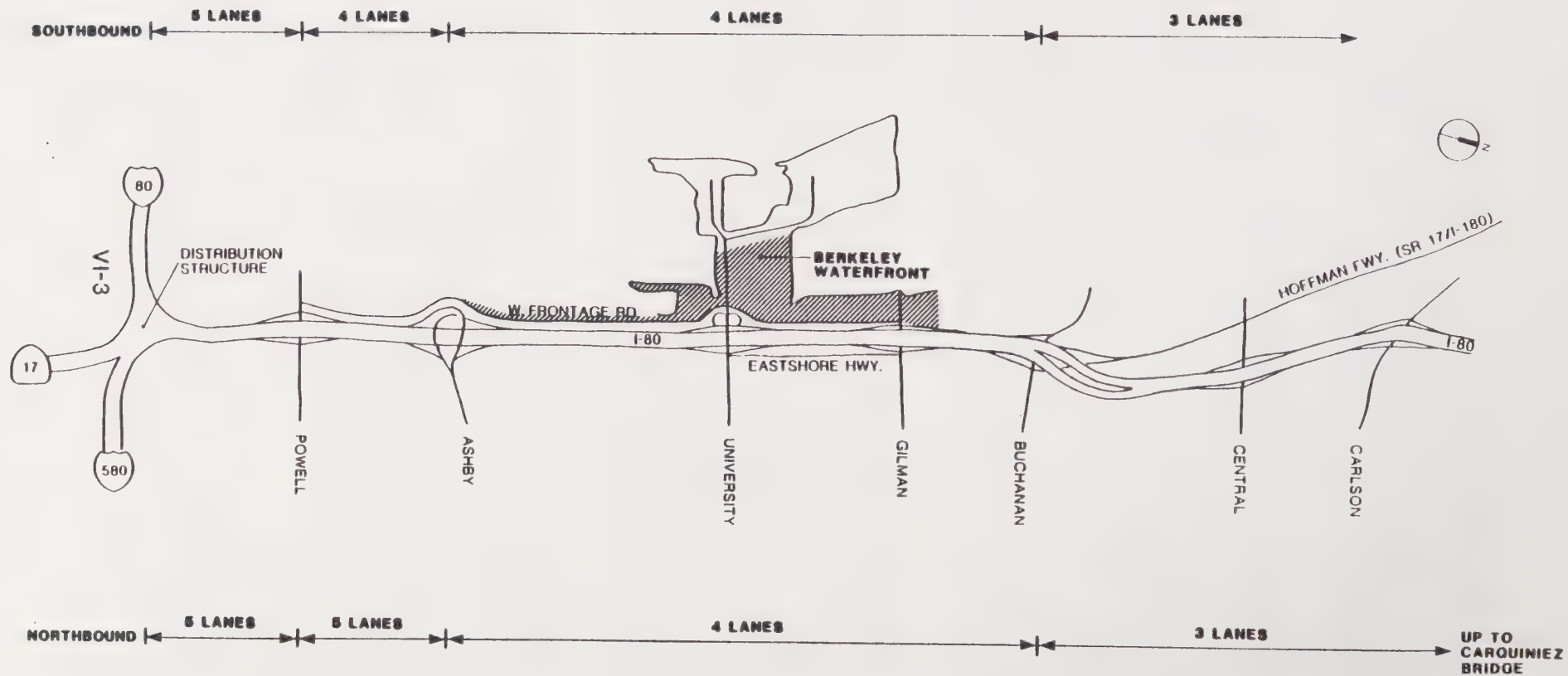


Figure VI-2
EXISTING FREEWAY GEOMETRICS

from the north and exiting to the south, only Gilman and Powell provide direct waterfront access for vehicles approaching from the south and exiting to the north. To reach the Berkeley waterfront, traffic approaching from the south must either exit at Powell Street and use the single northbound lane on West Frontage Road or travel past the site, exit at Gilman Street and use the southbound lanes on West Frontage Road.

North-south streets such as West Frontage Road, Hollis/7th/6th Streets and San Pablo Avenue offer convenient parallel routes to avoid congestion on I-80. The location of West Frontage Road immediately adjacent to I-80, its high speed limit (45 mph), the ease of access to and from the freeway and its relative lack of intersection delay cause the frontage road to function as additional freeway lanes carrying as much as 1800 vehicles per hour (vph) southbound in the morning and 650 vph northbound in the afternoon. The consumption of interchange capacity and West Frontage Road capacity by vehicles bypassing freeway congestion on I-80 reduces the ability of Gilman, University, Ashby, Powell and West Frontage Road to provide access to the Berkeley Waterfront. Diversion of freeway traffic to Hollis/7th/6th and San Pablo Avenue also affects access from the east by congesting intersections on the east-west arterial approaches to the waterfront.

Powell Street Interchange. The Powell Street interchange with I-80 consists of two on-ramps, two off-ramps and three signalized intersections: Powell Street/I-80 northbound ramps, Powell Street/I-80 southbound ramps and Powell Street/West Frontage Road (see Figure VI-3). The three intersections that make up the interchange operate as a single five-phase traffic signal because their signal lights are interconnected. During the AM peak hour, this multi-legged intersection operates at 83 percent of its theoretical capacity while during the PM peak hour it operates at a volume-to-capacity (v/c) ratio of 0.93, or 93 percent of its theoretical capacity (see Table VI-1 for a list of v/c ratios at study area intersections and Table VI-2 for a description of flow conditions corresponding to different v/c ratios).

The congested conditions at this interchange are caused by the additional burden placed on the intersections by traffic diverting from the freeway, the high volume of left turns from westbound Powell Street to the southbound on-ramp, the long traffic signal cycle length (150 seconds), the high number of signal phases and the lack of adequate westbound approach capacity on westbound Powell Street. In the morning as many as 600 vehicles per hour bypass congestion on I-80 southbound and enter the freeway at Powell Street from West Frontage Road (see Figure VI-4). The long cycle length and five phase operation also creates queues on the northbound off-ramp that occasionally back up onto the freeway during the AM peak period.

In the afternoon, northbound I-80 traffic backs up to the Distribution Structure from the Ashby Avenue on-ramp making West Frontage Road an attractive alternate route for northbound traffic. Two major components of the afternoon diversion are: 1) northbound traffic that exits the

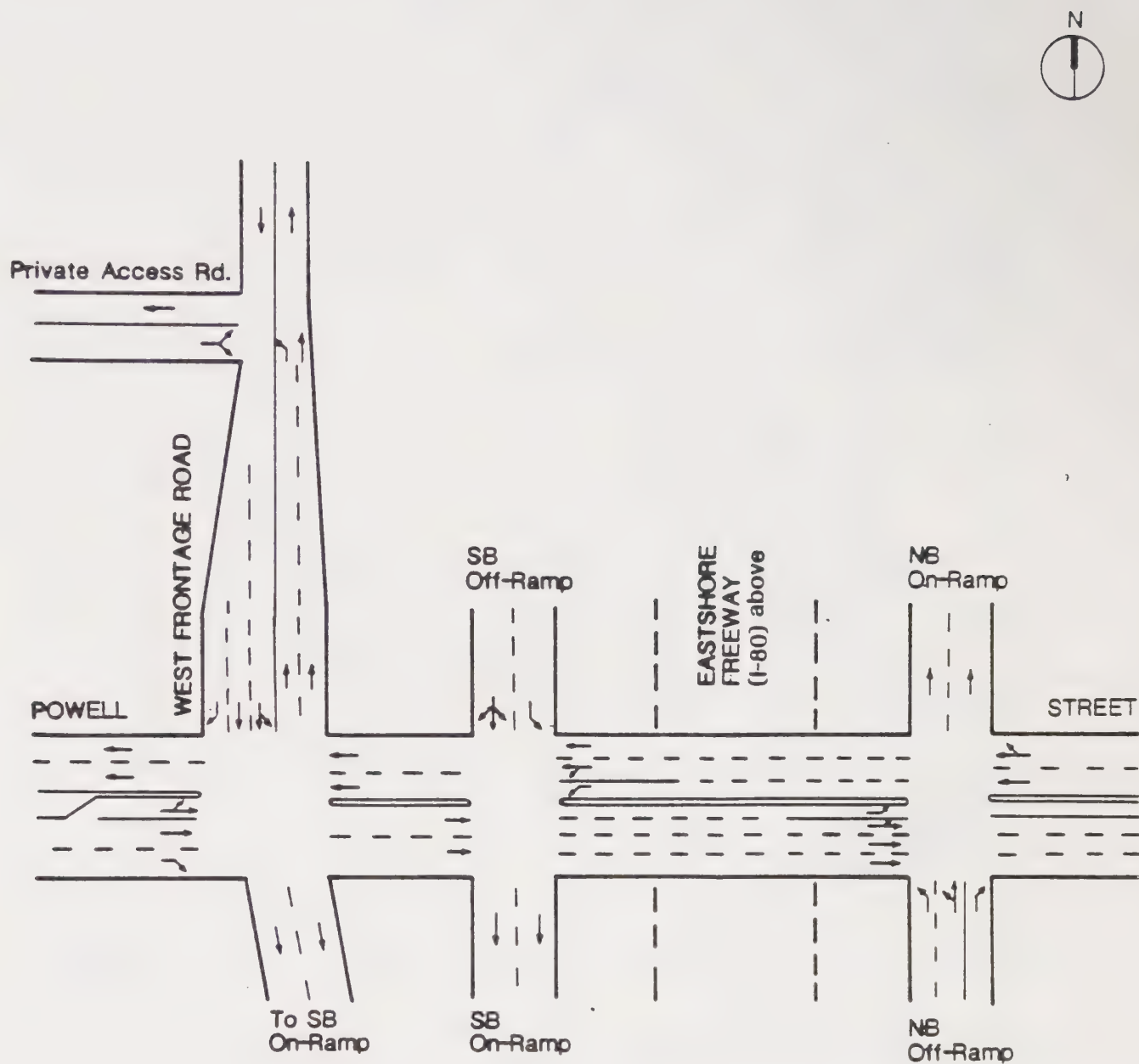
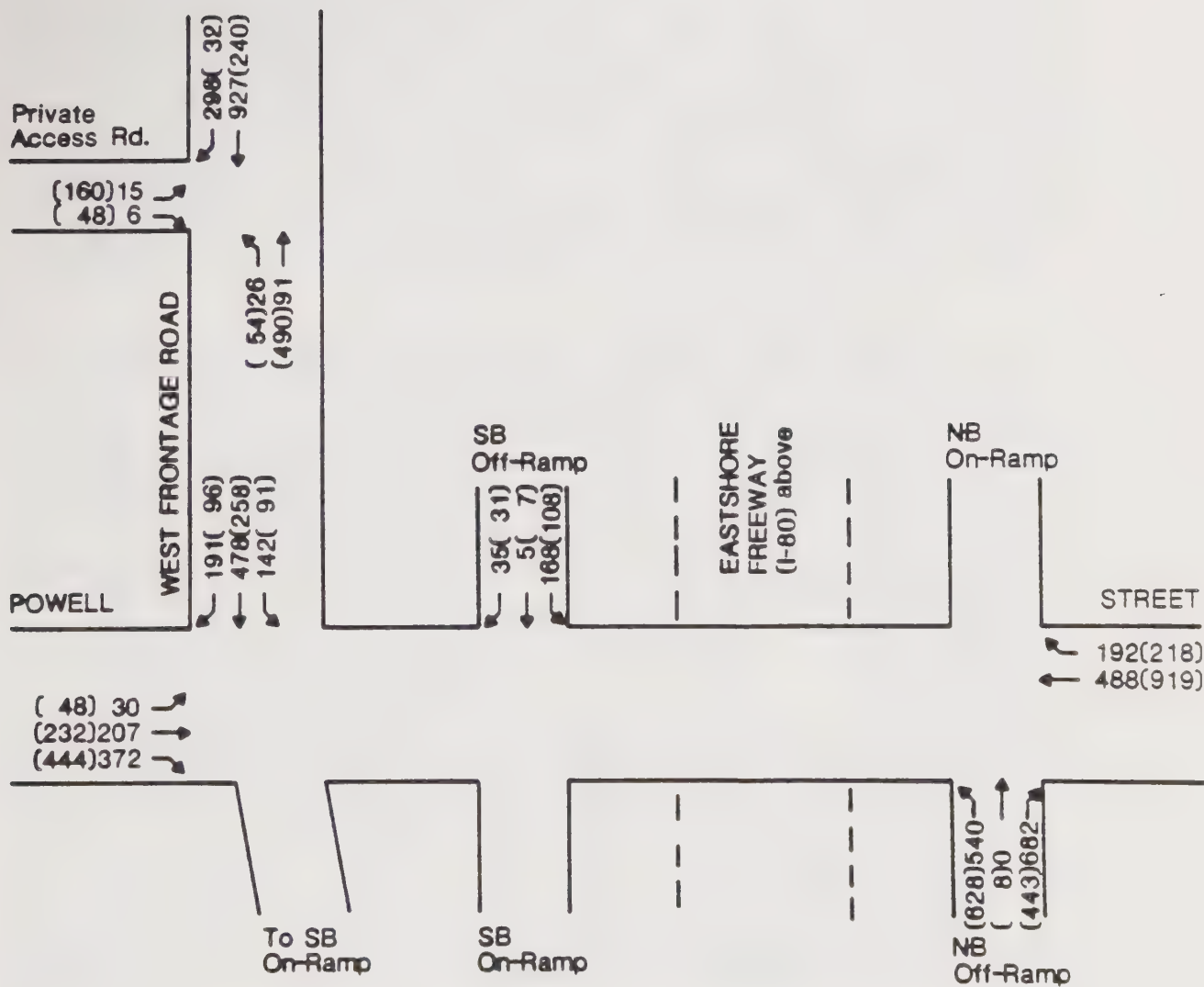


Figure VI-3

EXISTING GEOMETRICS AT POWELL/I-80 INTERCHANGE



VI-6

Figure VI-4

EXISTING AM(PM) PEAK HOUR VOLUMES AT
POWELL/I-80 INTERCHANGE

TABLE VI-1: AM AND PM PEAK HOUR VOLUME-TO-CAPACITY RATIOS
AT BERKELEY WATERFRONT AREA INTERSECTIONS (a)

<u>Intersection</u>	<u>Existing Geometrics</u>		<u>Caltrans Modifications (b)</u>	
	<u>AM</u> <u>Pk. Hr.</u>	<u>PM</u> <u>Pk. Hr.</u>	<u>AM</u> <u>Pk. Hr.</u>	<u>PM</u> <u>Pk. Hr.</u>
1. Gilman Street Interchange	0.81	0.92	0.51	0.67
2. University/San Pablo Ave.	0.68	0.82	0.68 (c)	0.82 (c)
3. University/Sixth St.	0.63	0.99	0.63 (c)	0.99 (c)
4. University/NB Ramps	N/A	N/A	0.64	0.84
5. University/W. Frontage Rd.	0.83	0.75	0.34	0.36
6. Ashby/Bay St.	N/A	N/A	0.41	0.58
7. Ashby/NB Ramps	N/A	N/A	0.44	0.57
8. Ashby SB Off/W. Frontage Rd.	0.65	0.50		
9. Ashby SB On/W. Frontage Rd.	0.52	0.51	0.33	0.30
10. Ashby Ave./W. Frontage Rd.	N/A	N/A	0.40	0.68
11. W. Frontage Rd./Private Access Rd.(Powell SB Ramps)	0.75	0.41	0.45	0.76
12. Powell Interchange	0.83	0.93	0.73	0.89

(a) Based on turning movement counts conducted by DKS Associates on November 22, December 8 and 13, 1983, and November 14, 15, 20, 28 and December 20, 1984.

(b) All intersections assumed to be signalized; intersection volumes equal to observed 1983 and 1984 turning movements minus the estimated effect of freeway diversion.

(c) Inadequate data available to predict volume reduction due to less freeway diversion.

SOURCE: DKS ASSOCIATES

TABLE VI-2: INTERSECTION OPERATING CONDITIONS
BASED ON VOLUME-TO-CAPACITY RATIOS

<u>V/C Ratio</u>	<u>Flow Description</u>
0.00-0.59	<u>Free Flow.</u> No approach phase is fully utilized by traffic and no vehicle waits longer than one red indication. Insignificant delays.
0.60-0.69	<u>Stable Operation.</u> An occasional approach phase is fully utilized. Many drivers begin to feel somewhat restricted within platoons of vehicles. Minimal delays.
0.70-0.79	<u>Stable Operation.</u> Major approach phase may become fully utilized. Most drivers feel somewhat restricted. Acceptable delays.
0.80-0.89	<u>Approaching Unstable.</u> Drivers may have to wait through more than one red signal indication. Queues develop but dissipate rapidly, without excessive delays.
0.90-0.99	<u>Unstable Operation.</u> Volumes at or near capacity. Vehicles may wait through several signal cycles. Long queues form upstream from intersection. Significant delays.
1.00 and above (a)	<u>Forced Flow.</u> Represents jammed conditions. Intersection would operate below capacity with low volumes. Queues might block upstream intersections. Excessive delays.

(a) Forecast volumes may produce v/c ratios greater than 1.00 although actual volumes cannot, by definition, exceed capacity except for short periods of time.

SOURCES: "Highway Capacity Manual", Highway Research Board, Special Report No. 87, Washington, D.C., 1965.

"Interim Materials on Highway Capacity", Transportation Research Board, Circular No. 212, Washington, D.C., January, 1980.

freeway at Powell Street and travels north on West Frontage Road and 2) westbound traffic on Powell Street that bypasses the northbound on-ramp and travels north on the frontage road instead. During the PM peak hour the combined volume of these two freeway diversion movements is about 490 vehicles, or almost 15 percent of the vehicles using the interchange during the PM peak hour./1/ This additional traffic due to freeway diversion consumes approximately six percent of the Powell Street interchange's theoretical capacity. Approximately 70 percent of the 490 vehicles were vehicles that bypassed the northbound on-ramp, and the remainder were vehicles that had exited the freeway at the northbound off-ramp.

Ashby Avenue Interchange. The existing Ashby Avenue interchange is designed as a high capacity, direct ramp connection between Ashby and I-80, but it lacks full freeway access for Berkeley waterfront and north Emeryville traffic (see Figure VI-5). As mentioned earlier, the absence of northbound ramps providing direct access to and from the Berkeley waterfront at Ashby Avenue forces vehicles to use West Frontage Road and either the Powell or the Gilman interchanges for these movements. Although northbound on- and off-ramps connect directly to Bay Street in northern Emeryville as part of the Ashby interchange, no direct access to I-80 southbound is provided and vehicles must detour through local streets to reach either Ashby Avenue or Powell Street for these movements. Compared to the University and Gilman interchanges, little traffic (about 190 vehicles during the AM peak hour) diverts from the freeway to West Frontage Road at Ashby Avenue (see Figure VI-6).

University Avenue Interchange. The University Avenue interchange also lacks direct access between northbound I-80 and the Berkeley waterfront (see Figure VI-7). Unlike the Ashby interchange, however, University Avenue experiences heavy usage and a significant amount of freeway diversion. During the AM peak hour the west side of the University Avenue interchange (the adjacent West Frontage Road and southbound ramp intersections) operates at a v/c ratio of 0.83./2/ This level of intersection utilization is due in large part to the 560 vehicles diverting to West Frontage Road from I-80 southbound at University and the 1110 vehicles that divert to the southbound frontage road at Gilman Street (see Figure VI-8). During the PM peak hour the west side of the University interchange operates at 75 percent of capacity with the improved operating conditions partly a result of the lower levels of northbound traffic bypassing freeway congestion on West Frontage Road. The traffic diverting from the freeway along West Frontage Road alone is responsible for the consumption of about 70 percent of the University Avenue interchange's west side capacity during the AM peak hour and approximately 40 percent of the capacity during the PM peak hour.

Gilman Street Interchange. The Gilman Street interchange with I-80 is the most complex of the four studied in terms of the number of closely-spaced intersections (see Figure VI-9). The interchange consists of two freeway on-ramps, two freeway off-ramps that are stop sign controlled, a two-way local street (West Frontage Road) controlled by a stop sign where it intersects Gilman Street on the west side of the freeway and a two-way local street (Eastshore Highway) controlled by stop signs where it crosses Gilman Street on the east side of the freeway. The close spacing of four

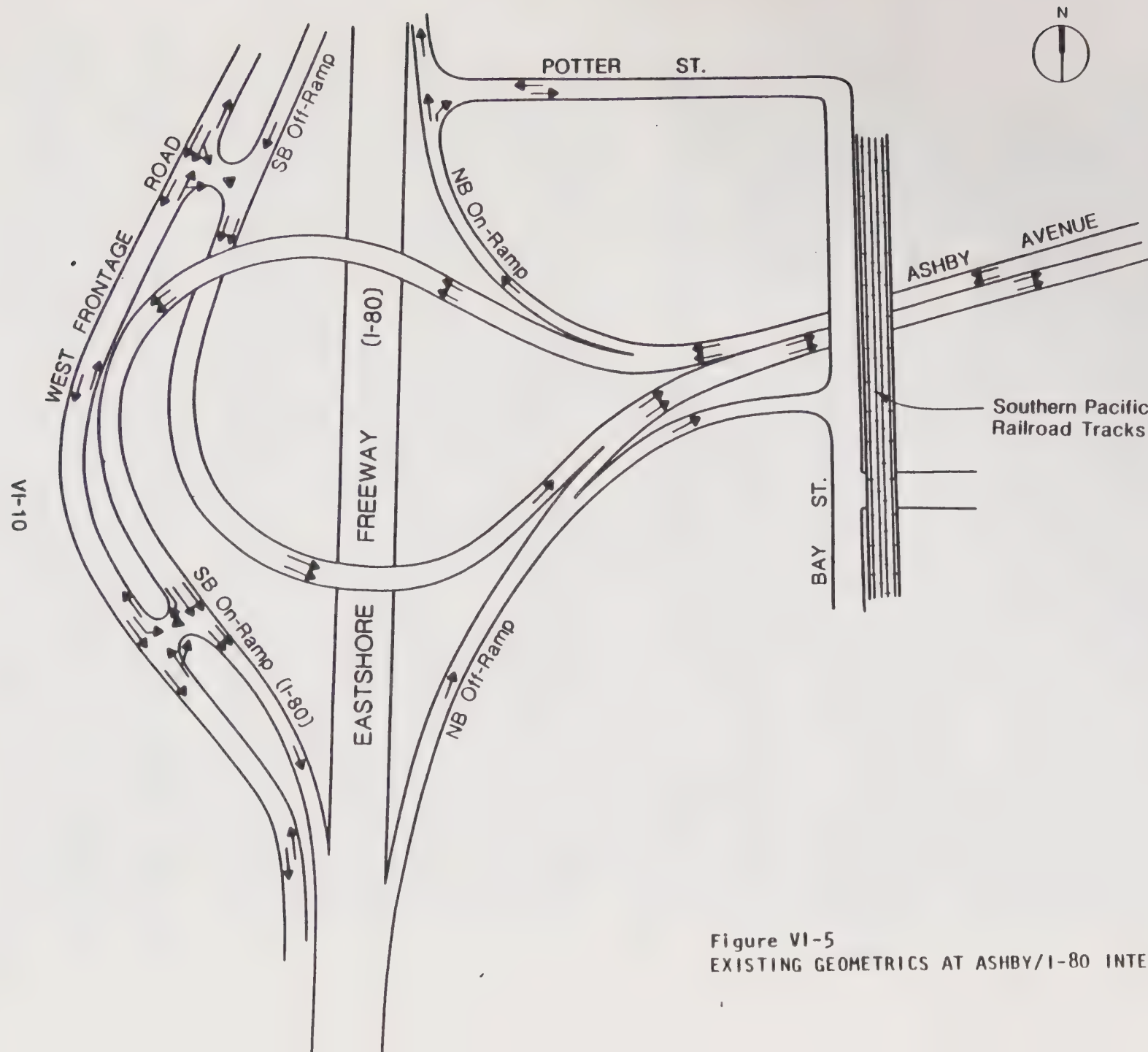


Figure VI-5
EXISTING GEOMETRICS AT ASHBY/I-80 INTERCHANGE

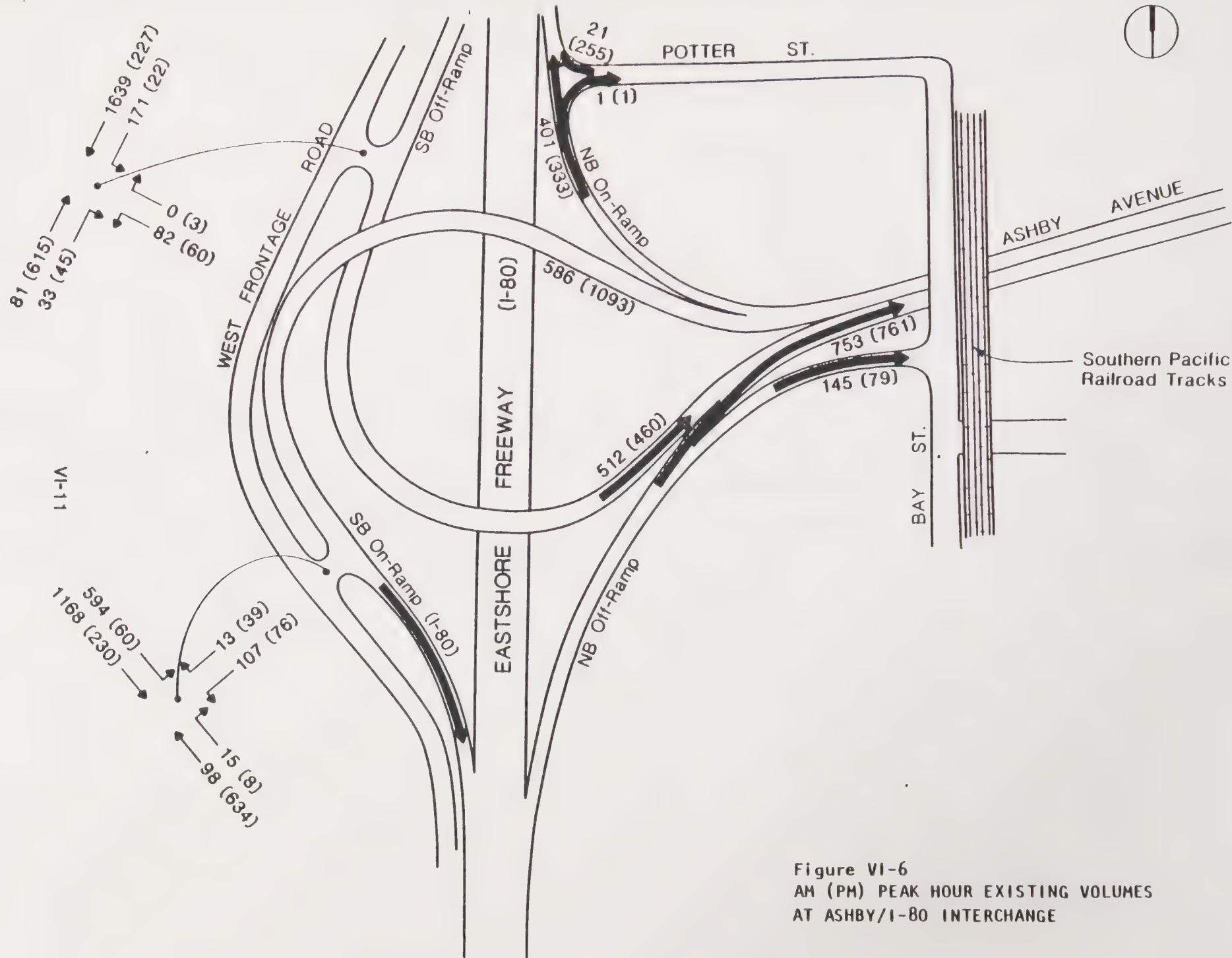


Figure VI-6
AM (PM) PEAK HOUR EXISTING VOLUMES
AT ASHBY/I-80 INTERCHANGE

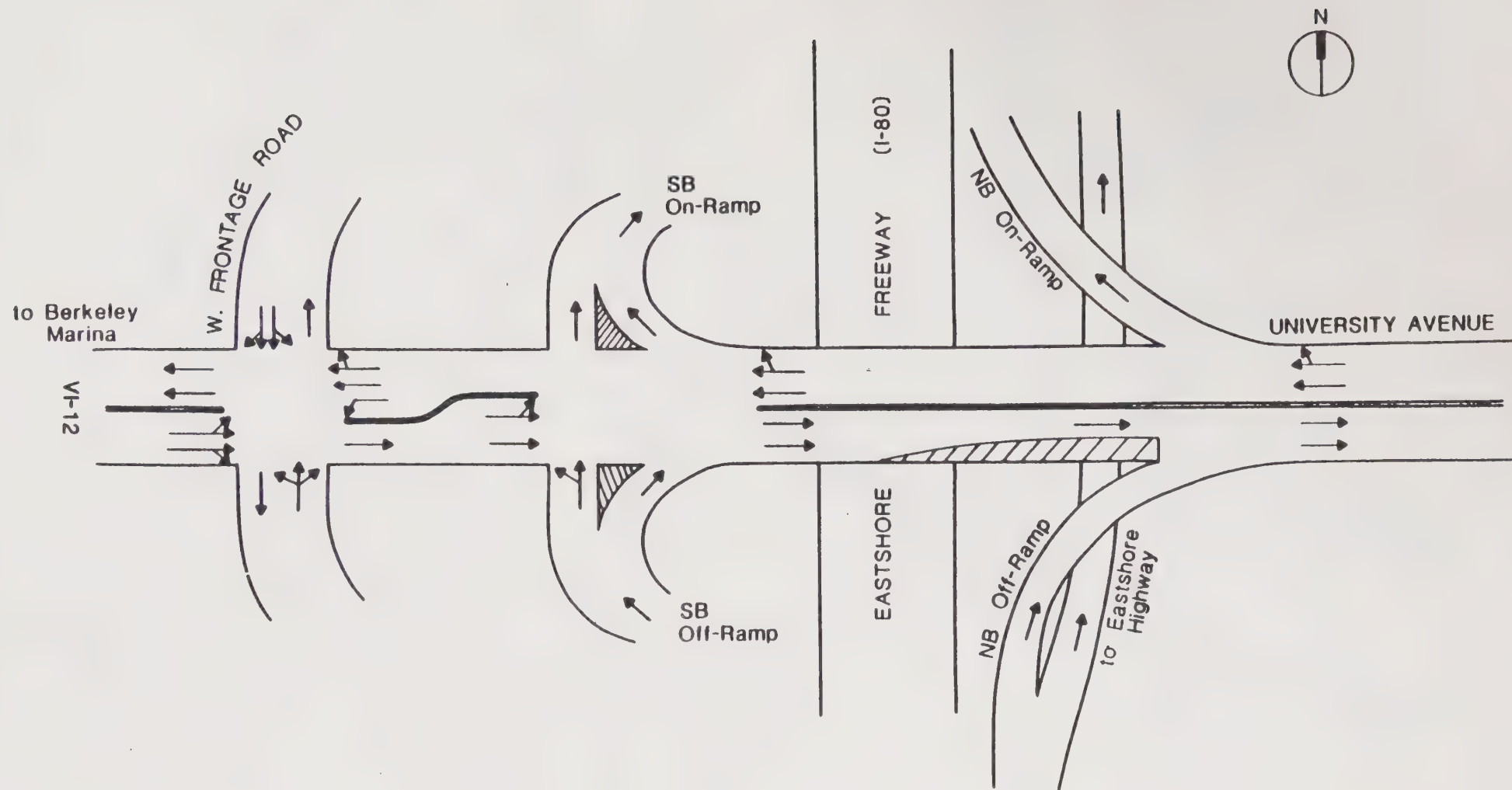


Figure VI-7
EXISTING GEOMETRICS AT UNIVERSITY/I-80 INTERCHANGE

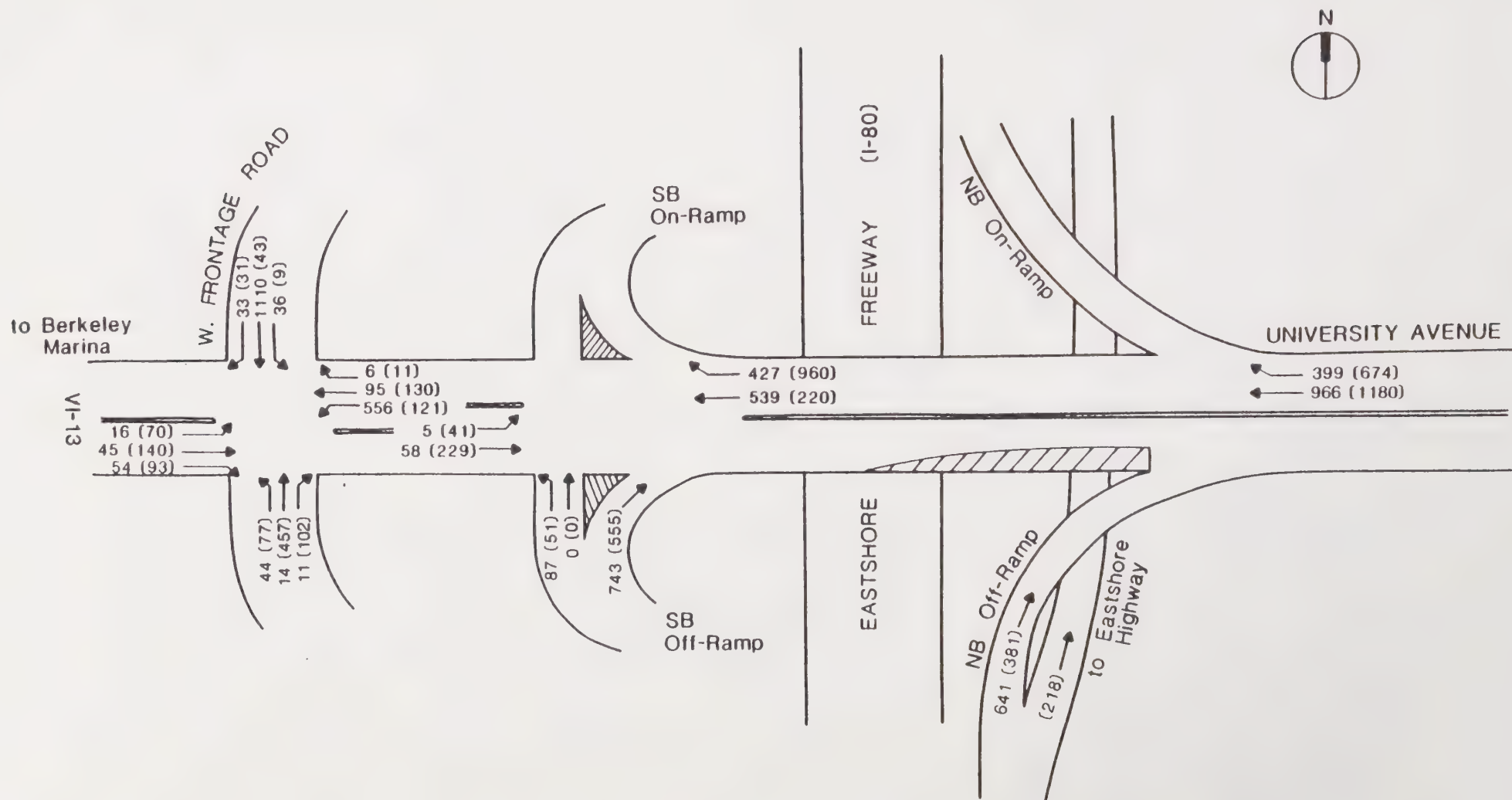


Figure VI-8
EXISTING AM (PM) PEAK HOUR VOLUMES
AT UNIVERSITY/I-80 INTERCHANGE

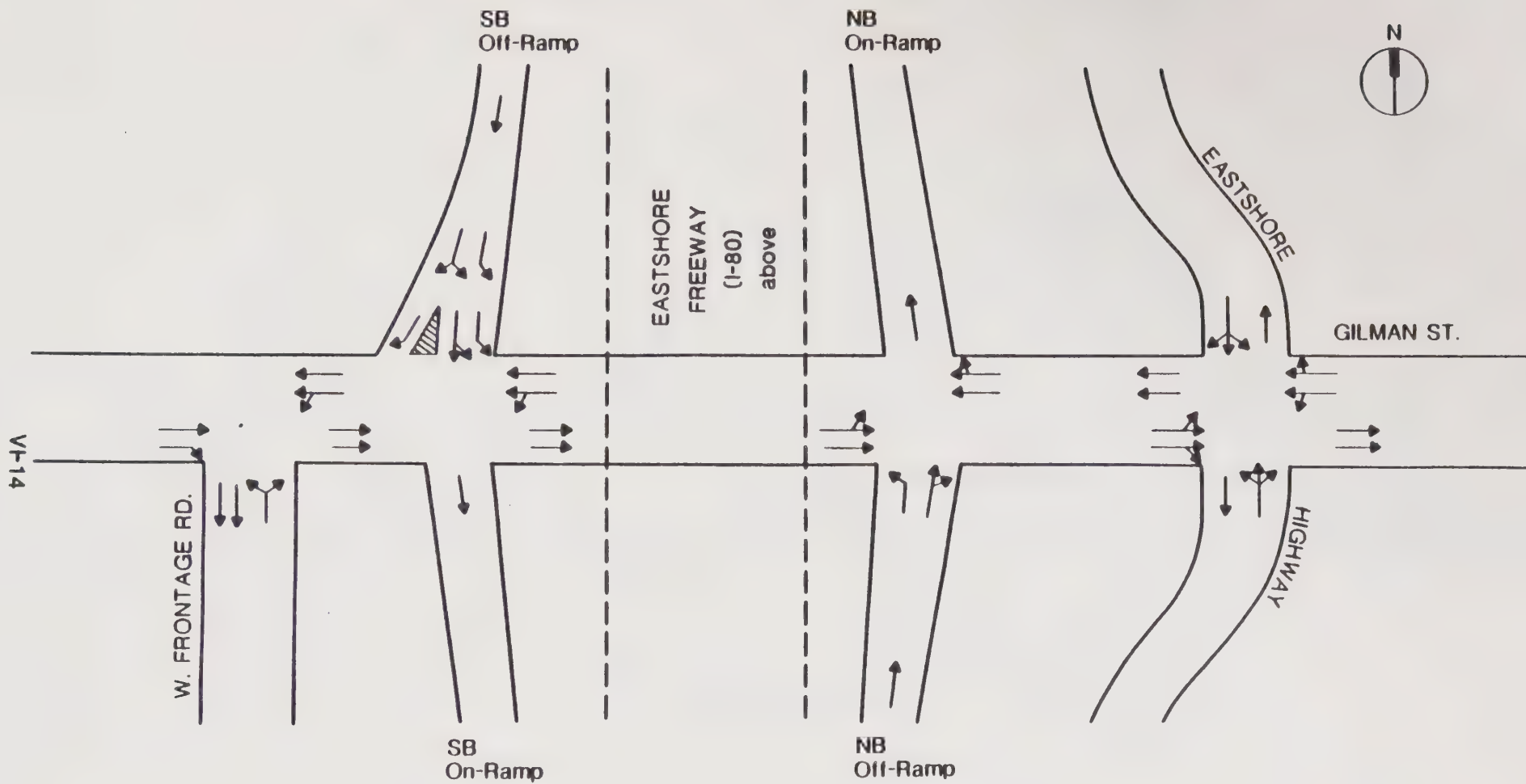


Figure VI-9
EXISTING GEOMETRICS AT GILMAN/I-80 INTERCHANGE

intersections at this interchange creates many vehicular conflicts as vehicles try to maneuver from one intersection to another without benefit of traffic signal control. In addition to the problems created by the close spacing of intersections and the lack of signal control, about 1080 vehicles divert from southbound I-80 to West Frontage Road at Gilman Street during the AM peak hour (see Figure VI-10). During the PM peak hour approximately 530 vehicles divert to the Gilman Street interchange via northbound West Frontage Road adding to the eastbound volumes through the interchange and to the northbound on-ramp volumes.

Traffic counts were conducted at the Gilman Street interchange when the adjacent race track, Golden Gate Fields, was not in operation. Even without the additional traffic generated by race track operations, the interchange operates at 81 percent of capacity during the AM peak hour and 92 percent of capacity during the PM peak hour on an "typical" weekday./3/ Here too, diverting traffic consumes interchange capacity -- about 10 percent during the AM peak hour and about 20 percent during the PM peak hour.

University/Sixth Street Intersection. The intersection of University Avenue and Sixth Street at the eastern end of the University Avenue interchange in Berkeley is controlled by a two phase traffic signal. Sixth Street is designated in the 1977 Berkeley Master Plan as a collector street that, together with Seventh Street and Hollis Street, provides north-south circulation through the mixed industrial and residential areas east of I-80 from Oakland to Albany. At the University intersection, Sixth Street has two lanes each for northbound and southbound traffic (see Figure VI-11). University Avenue, designated a major street in the Master Plan, provides four lanes for eastbound traffic and three lanes for westbound traffic at the intersection.

Traffic was observed to move fairly efficiently through the University/Sixth and University/San Pablo intersections, and, as a result, saturation flow studies were conducted at these two intersections on December 14, 1984, to determine how the operating capacity of the intersections compared to the theoretical capacity. The operating capacity was found to be approximately 1700 vph instead of the theoretical capacity of 1500 vph normally used for the purposes of planning studies. Since this higher capacity value was consistent with the observed efficiency of intersection operation, the 1700 vph was used as the theoretical intersection capacity in the analysis of v/c ratios for all study area intersections except the Powell Street interchange./4/

The University/Sixth intersection currently operates at 63 percent of capacity during the AM peak hour and 99 percent of capacity during the PM peak hour. The main reason for the difference between the AM and PM peak hour intersection performance is the approximately 260 percent increase in northbound traffic on Sixth Street during the PM peak hour (see Figure VI-12). The northbound PM peak hour volume is even greater than the southbound AM peak hour volume indicating that this increase is due to more than the normal reversal of morning commute patterns. Since Sixth/Seventh Street runs parallel to and about one-half mile east of I-80, it appears that some portion of this afternoon traffic increase is due to freeway diversion.

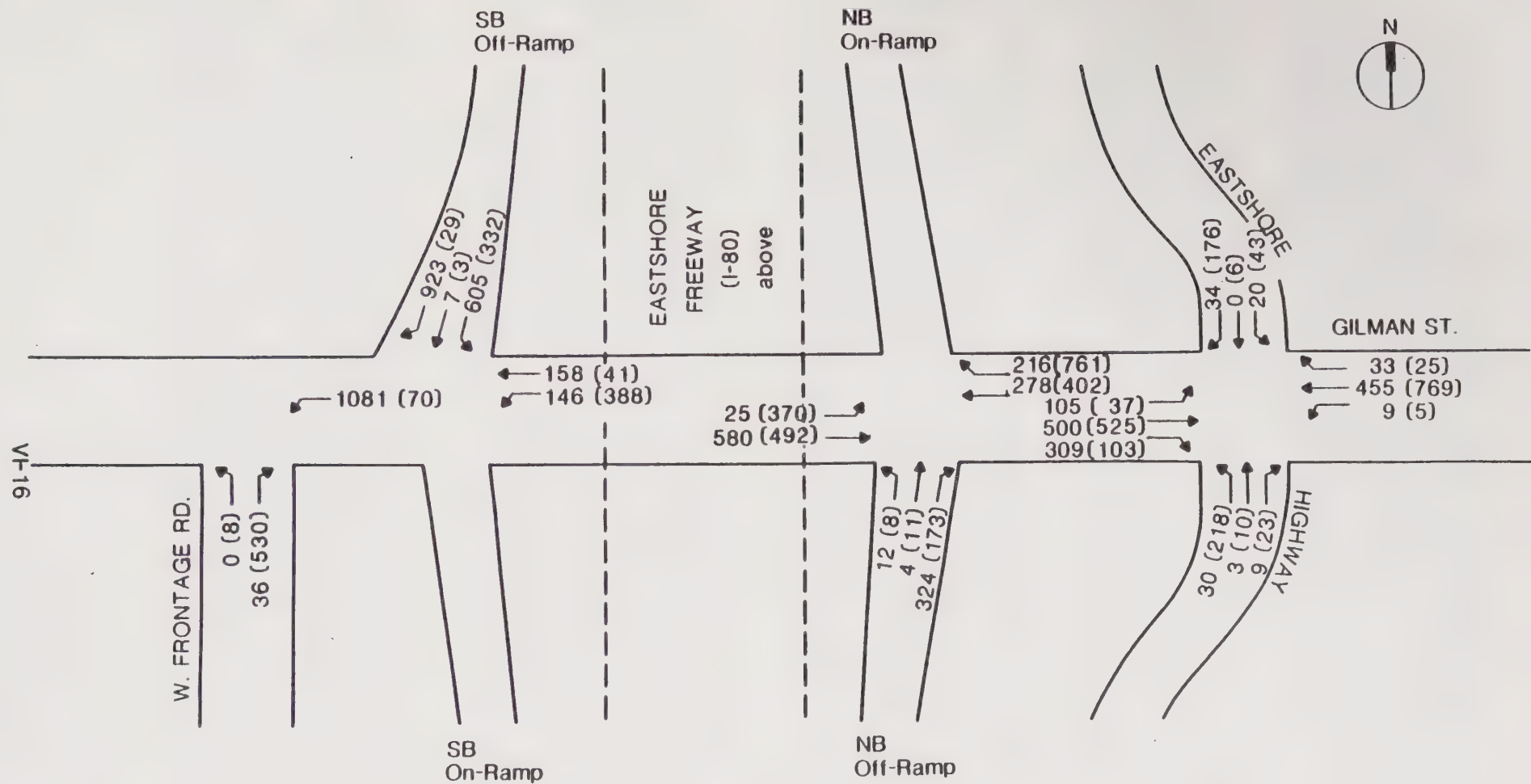


Figure VI-10
EXISTING AM (PM) PEAK HOUR VOLUMES
AT GILMAN/I-80 INTERCHANGE

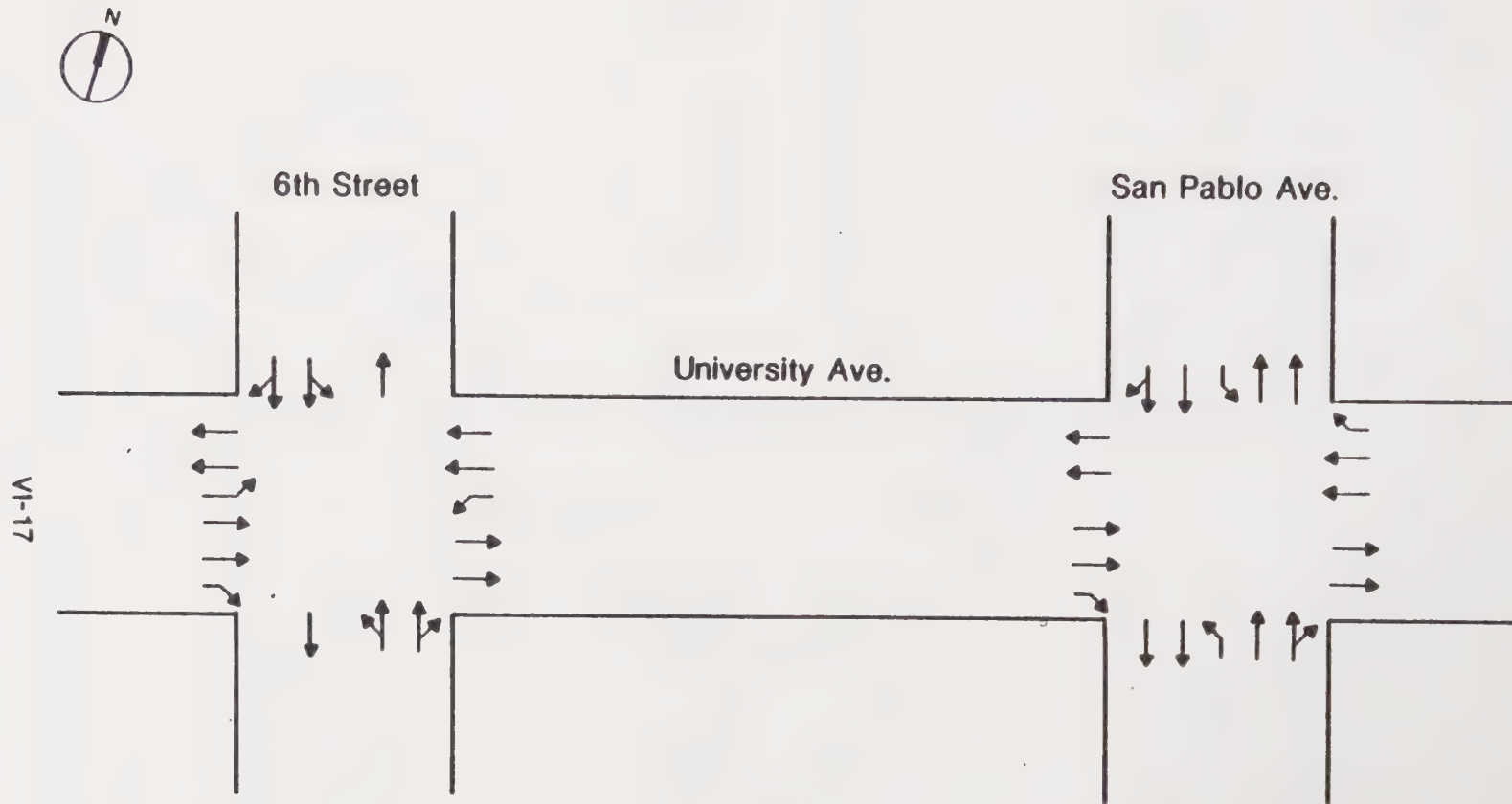


Figure VI-11
EXISTING LANE GEOMETRICS AT UNIVERSITY/SIXTH AND UNIVERSITY/SAN PABLO

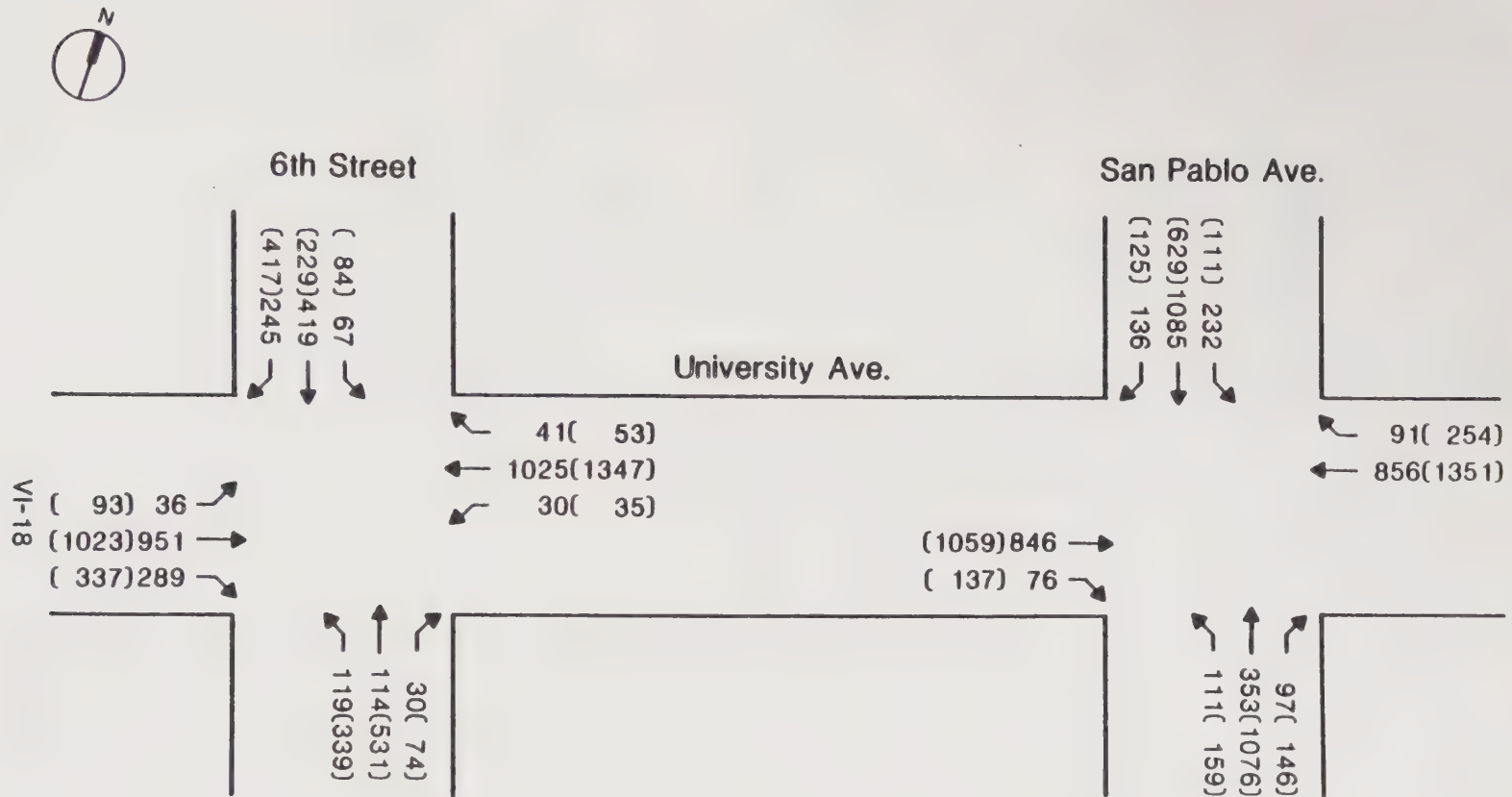


Figure VI-12

EXISTING AM(PM) PEAK HOUR VOLUMES AT UNIVERSITY/SIXTH AND UNIVERSITY/SAN PABLO

These high volumes create long queues on the northbound approach to University Avenue, and vehicles frequently have to wait through more than one signal cycle to get through the intersection.

Another significant traffic pattern affecting operations at the University/Sixth intersection is the circulation pattern created by the placement of University Avenue on an elevated structure west of Sixth Street. Although the northbound I-80 off-ramp at University Avenue also provides direct access to Eastshore Highway and the area between Sixth Street and Eastshore Highway, no direct return ramp from Eastshore Highway to University is provided. The University/Sixth intersection provides the most convenient location for access to the University Avenue interchange for traffic originating between Sixth Street and Eastshore Highway in the vicinity of University Avenue. This access pattern is partly responsible for over 400 vehicles making right turns from southbound Sixth Street onto westbound University during the PM peak hour.

University/San Pablo Avenue Intersection. The intersection of San Pablo Avenue and University Avenue also is controlled by a two phase traffic signal. All four approaches to the intersection have three lanes for traffic (see Figure VI-11). The University/San Pablo intersection currently operates with a v/c ratio of 0.68 during the AM peak hour and 0.82 during the PM peak hour. The increase in intersection utilization during the PM peak hour is mainly due to the increase in westbound traffic on University Avenue (see Figure VI-12).

No obvious freeway diversion impacts are apparent at University and San Pablo. Although San Pablo Avenue runs parallel to I-80 from Oakland to Richmond, its location three-quarters of a mile east of the freeway does not produce an unexpected increase in northbound volumes similar to that observed on Sixth Street.

Proposed Roadway Modifications/5/

Freeway Widening. The I-80/180 Operational Improvements Program, a California Department of Transportation (Caltrans) plan for modifying and reconstructing segments of the I-80 freeway between the Bay Bridge Toll Plaza and the Carquinez Bridge, includes a proposed widening of I-80 in both the northbound and southbound directions through Berkeley (see Figure VI-13). Between Powell Street and Ashby Avenue the existing five northbound lanes would be retained and the southbound roadway widened from four lanes to six by the addition of one freeway lane plus one auxiliary lane./6/ Between Ashby and University Avenues the freeway would be widened from four lanes to five in each direction - representing a 25 percent increase in existing capacity. Between University and Gilman the northbound roadway would be widened from four lanes to five, and the southbound roadway would be widened from four lanes to six with the addition of one freeway lane and one auxiliary lane. Between Gilman and Buchanan the freeway would be widened from three lanes in each direction to four northbound lanes and six southbound lanes (which merge to five lanes by the time they reach Gilman) plus a southbound auxiliary lane.

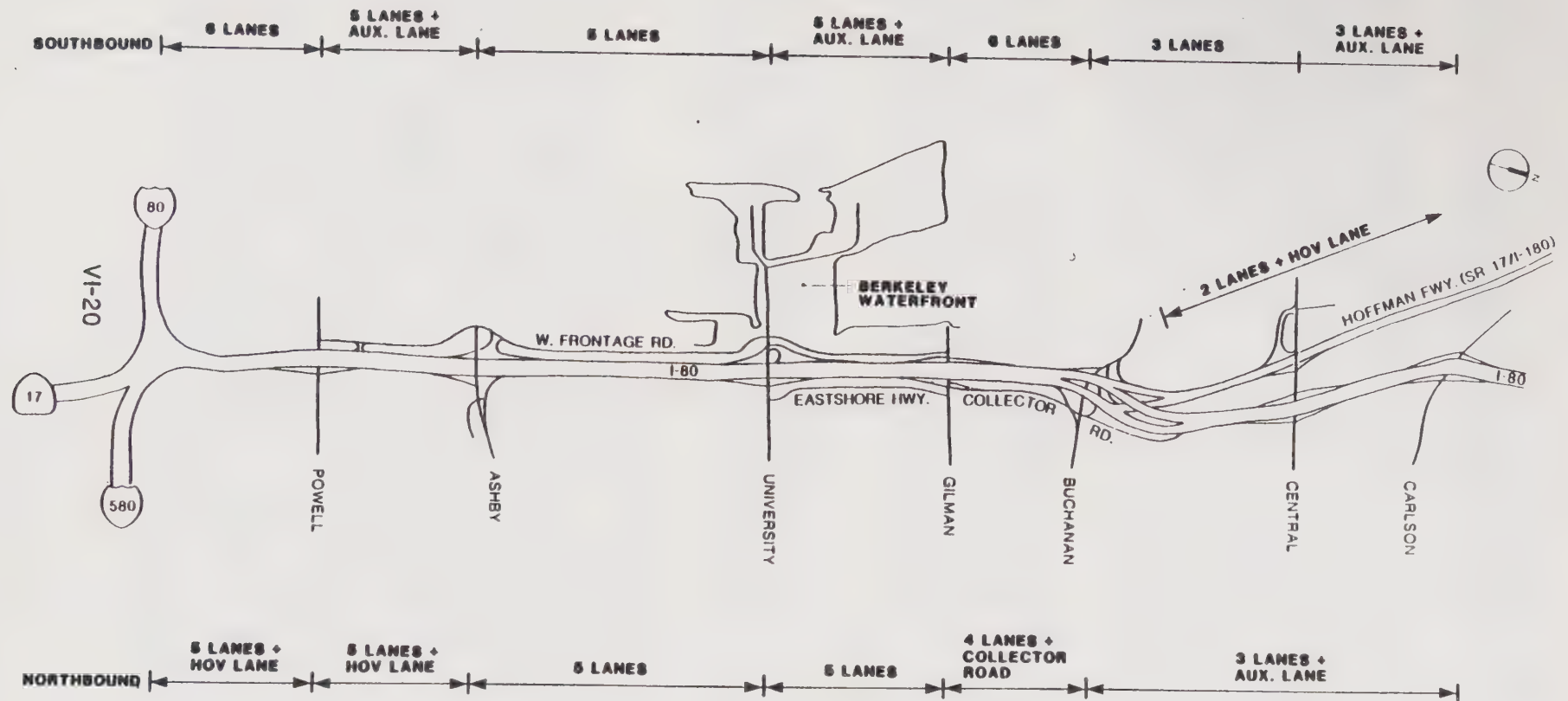


Figure VI-13
CALTRANS PROPOSED GEOMETRICS

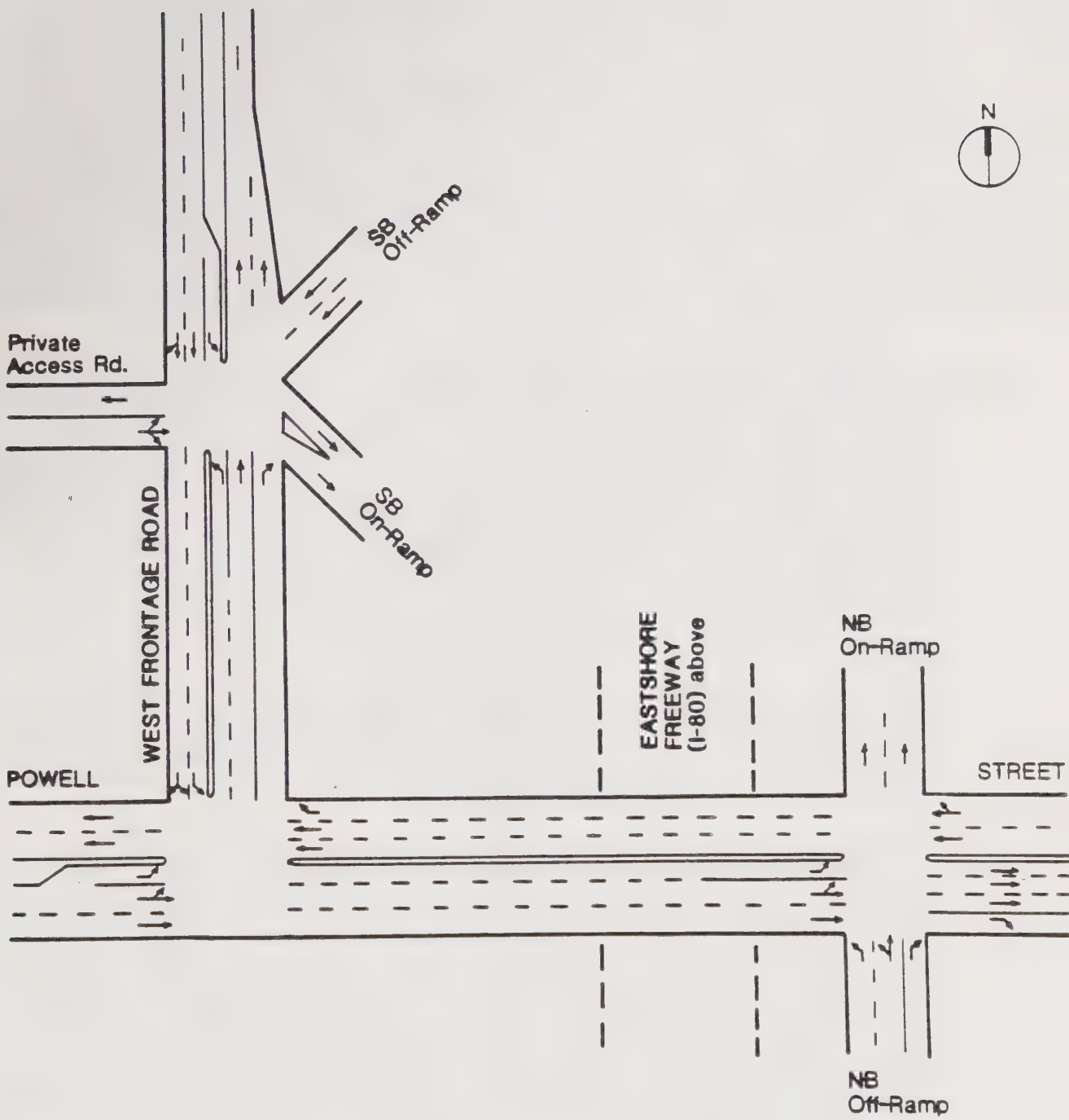
Powell Street Interchange Modifications. Caltrans also has proposed modifications to the Powell Street interchange as part of the I-80/180 Operational Improvements Program. The major change to the Powell Street interchange would be the relocation of the southbound on- and off-ramps from Powell Street to a West Frontage Road/Private Access Road intersection near the current site of Carlos Murphy's Restaurant (see Figure VI-14). This relocation would provide greater maneuvering distance between the southbound on-ramp and the Distribution Structure and eliminate the need for the existing signal on Powell Street at the southbound ramps. Removal of one of the three signals at the interchange would increase the storage area between the remaining signals and would also simplify their operation. Caltrans also plans to widen the northbound off-ramp from one lane to two lanes where it leaves the freeway to provide greater exiting capacity and more storage space for queueing on the ramp caused by the signal at Powell Street.

Ashby Avenue Interchange Modifications. Caltrans' I-80/180 Operational Improvements Program includes proposed modifications to the Ashby Avenue/I-80 interchange to provide full directional access to both the Berkeley waterfront and Bay Street in Emeryville. Caltrans proposes to extend Ashby Avenue across I-80 as a four-lane arterial to intersect directly with West Frontage Road (see Figure VI-15). The intersections of the southbound on- and off-ramps with West Frontage Road would be consolidated into a single intersection near the existing off-ramp intersection. The northbound off-ramp to Ashby would be redesigned to permit left turns toward West Frontage Road as well as right turns to eastbound Ashby Avenue. The northbound on-ramp connection to Ashby would also be redesigned to permit left turns from eastbound Ashby Avenue.

A new, two-way street would connect Bay Street to Ashby Avenue directly opposite the Ashby on-ramp to northbound I-80. The redesigned ramps, new connection to Bay Street and the extension of Ashby to West Frontage Road would provide full access between northbound and southbound I-80 and the Berkeley waterfront and north Emeryville.

University Avenue Interchange Modifications. Caltrans has also proposed a major redesign of the University Avenue interchange to provide full directional access and to eliminate some of the conflicts between on- and off-ramp traffic. The northbound off-ramp to University Avenue would be redesigned to permit both left turns toward the waterfront and right turns toward downtown Berkeley (see Figure VI-16). As part of this redesign, the existing northbound off-ramp connection to East Shore Highway would be eliminated. In its place a new two-way street from Eastshore Highway connecting to University Avenue above Second Street would be constructed. This new roadway would provide direct access between the University Avenue interchange and Eastshore Highway for traffic in the area between Sixth Street and Eastshore Highway. The northbound on-ramp also would be redesigned to permit traffic from the waterfront to make left turns from eastbound University Avenue onto the ramp.

The existing southbound "loop" off-ramp would be removed from the south side of the interchange and relocated to the north side of the interchange as a straight off-ramp connecting to University Avenue. A new southbound



VI-23

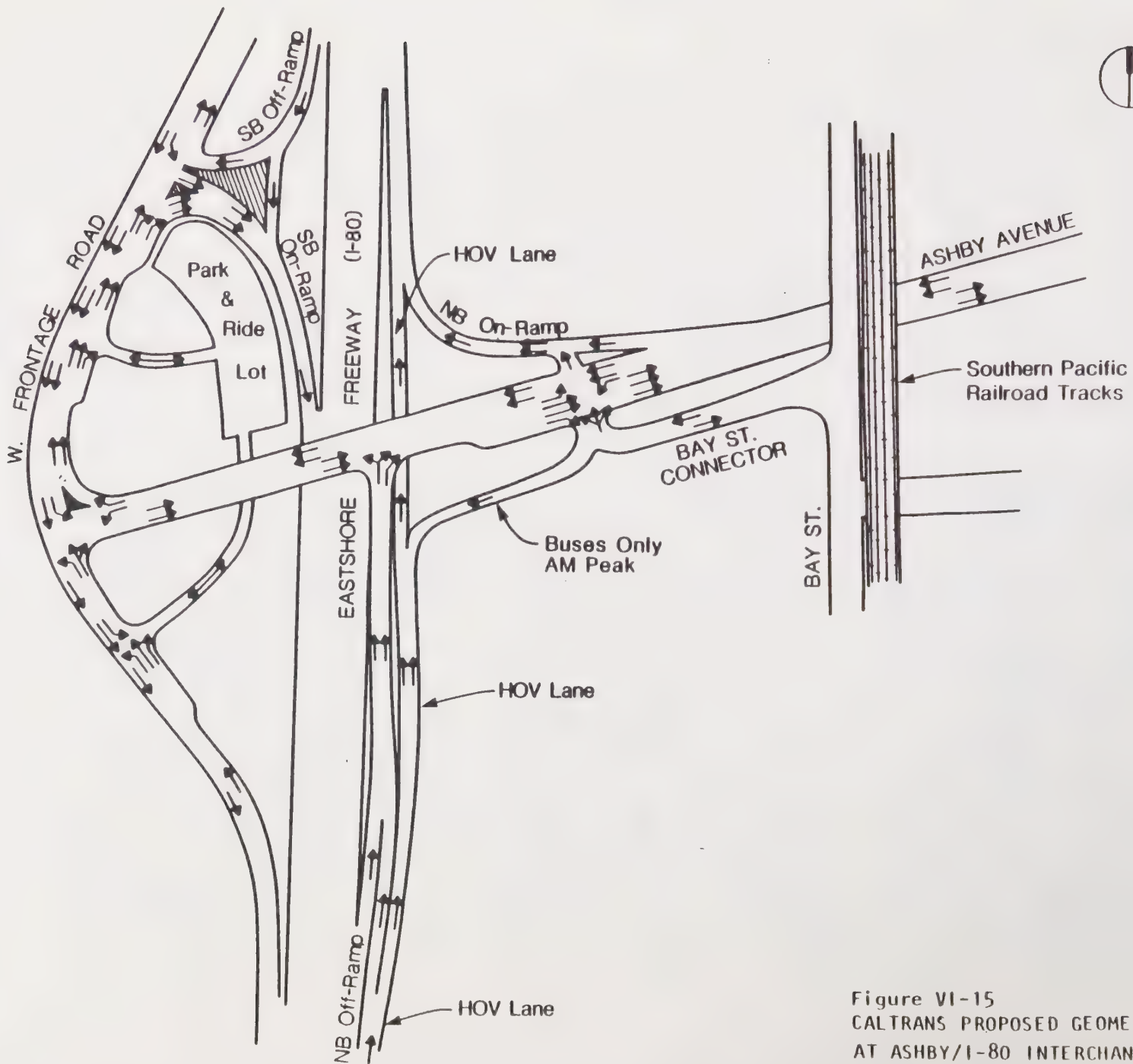


Figure VI-15
CALTRANS PROPOSED GEOMETRICS
AT ASHBY/I-80 INTERCHANGE

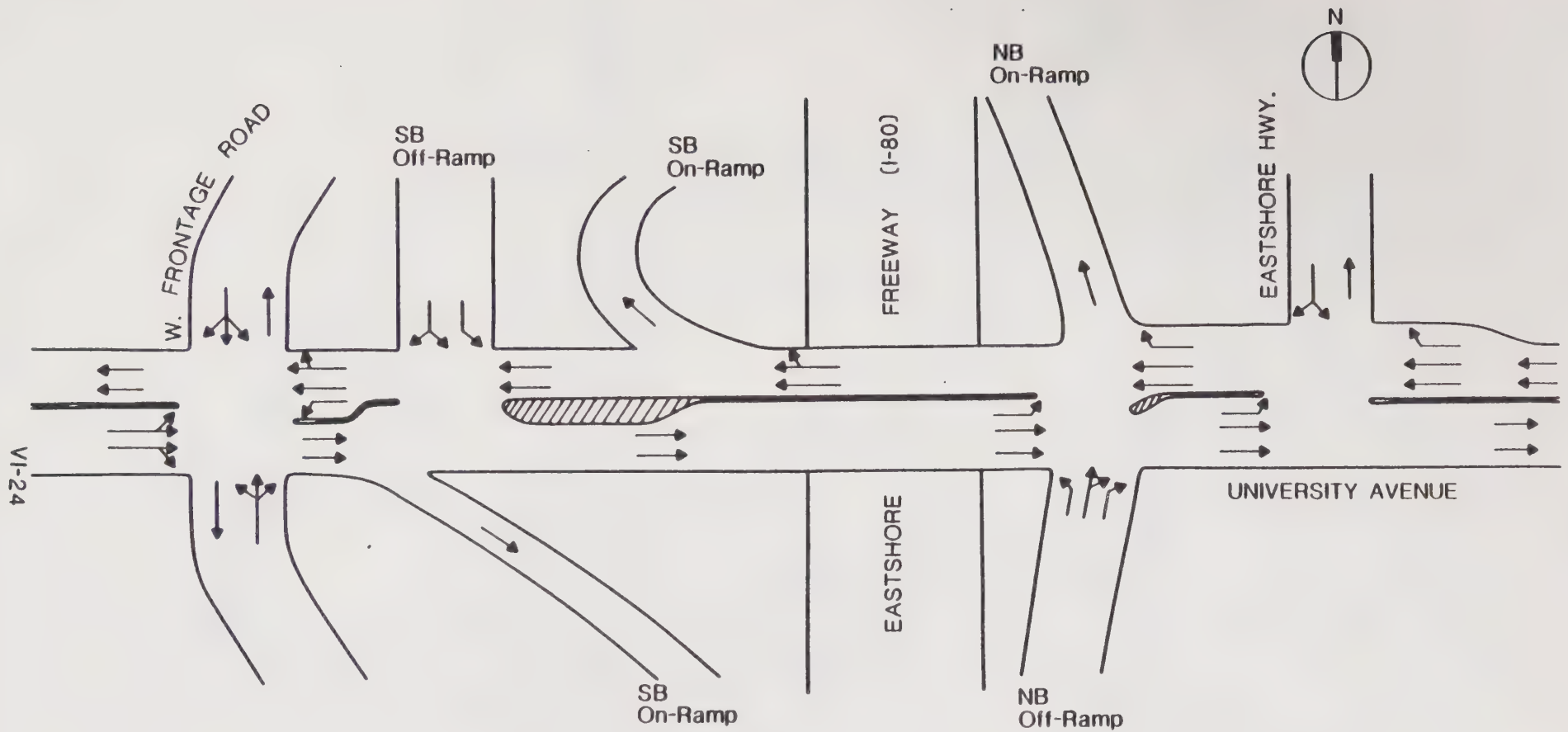


Figure VI-16
 CALTRANS PROPOSED GEOMETRICS
 AT UNIVERSITY/I-80 INTERCHANGE

on-ramp serving eastbound University Avenue traffic would be added where the southbound "loop" off-ramp would be removed. West Frontage Road would be relocated about 100 feet west of its current location at the interchange to accommodate the new ramp configuration and to increase the storage distance between the frontage road and ramp intersections.

Gilman Street Interchange Modifications. The configuration of the Gilman Street interchange would remain basically the same with two exceptions: Gilman and Buchanan Street northbound off-ramp traffic would be consolidated at Gilman Street and Gilman Street northbound on-ramp traffic would merge into a new, elevated collector road instead of northbound I-80 (see Figure VI-17). West Frontage Road would be relocated about 100 feet west of its current intersection with Gilman Street and narrowed to one lane in each direction throughout its length.

The construction of an elevated collector road along the east side of I-80 from the Gilman Street northbound off-ramp to the vicinity of the existing Pierce Street on-ramp is proposed to provide additional northbound capacity and to replace the existing direct ramp connections between Buchanan and Pierce Streets and I-80 northbound. Buchanan Street traffic would have to use the collector road for access to and from northbound I-80 under this proposal. The Gilman Street northbound off-ramp would be widened from one lane to two where it exits the freeway to accommodate the combined traffic load of both Gilman and Buchanan Street off-ramp traffic. Connecting the Gilman Street northbound on-ramp to the new collector road would eliminate the traffic conflicts created by vehicles maneuvering from the Gilman Street northbound on-ramp across two lanes of I-80 to the left side exit for SR 17 (I-180). Existing Gilman Street traffic bound for SR 17/I-180 would have to shift to Buchanan Street or University Avenue under this proposal.

University/Sixth & University/San Pablo. No modifications to these intersections are proposed as part of the I-80/180 Operational Improvements Program.

High Occupancy Vehicle Lanes. Even with the proposed freeway widening, Caltrans still expects some congestion northbound on I-80 between the Bay Bridge and Ashby Avenue during the PM peak period. Caltrans has included in its I-80/180 Operational Improvements Program a proposal that a separate, two-lane elevated structure be built from the median at the eastern end of the San Francisco-Oakland Bay Bridge to the Ashby Avenue interchange. Just north of 64th Street in Emeryville the structure would separate into two ramps. One ramp would continue north to merge into the freeway with the northbound on-ramp from Ashby and the other ramp would merge with the redesigned northbound I-80 off-ramp to Ashby Avenue. This facility would allow high occupancy vehicles (buses, vanpools and carpools) to bypass congestion on northbound I-80 during the afternoon peak period.

The I-80 high occupancy vehicle (HOV) lanes between the Bay Bridge and Ashby Avenue are planned to operate northbound in the afternoon only (with the possible exception that buses may be permitted to operate southbound

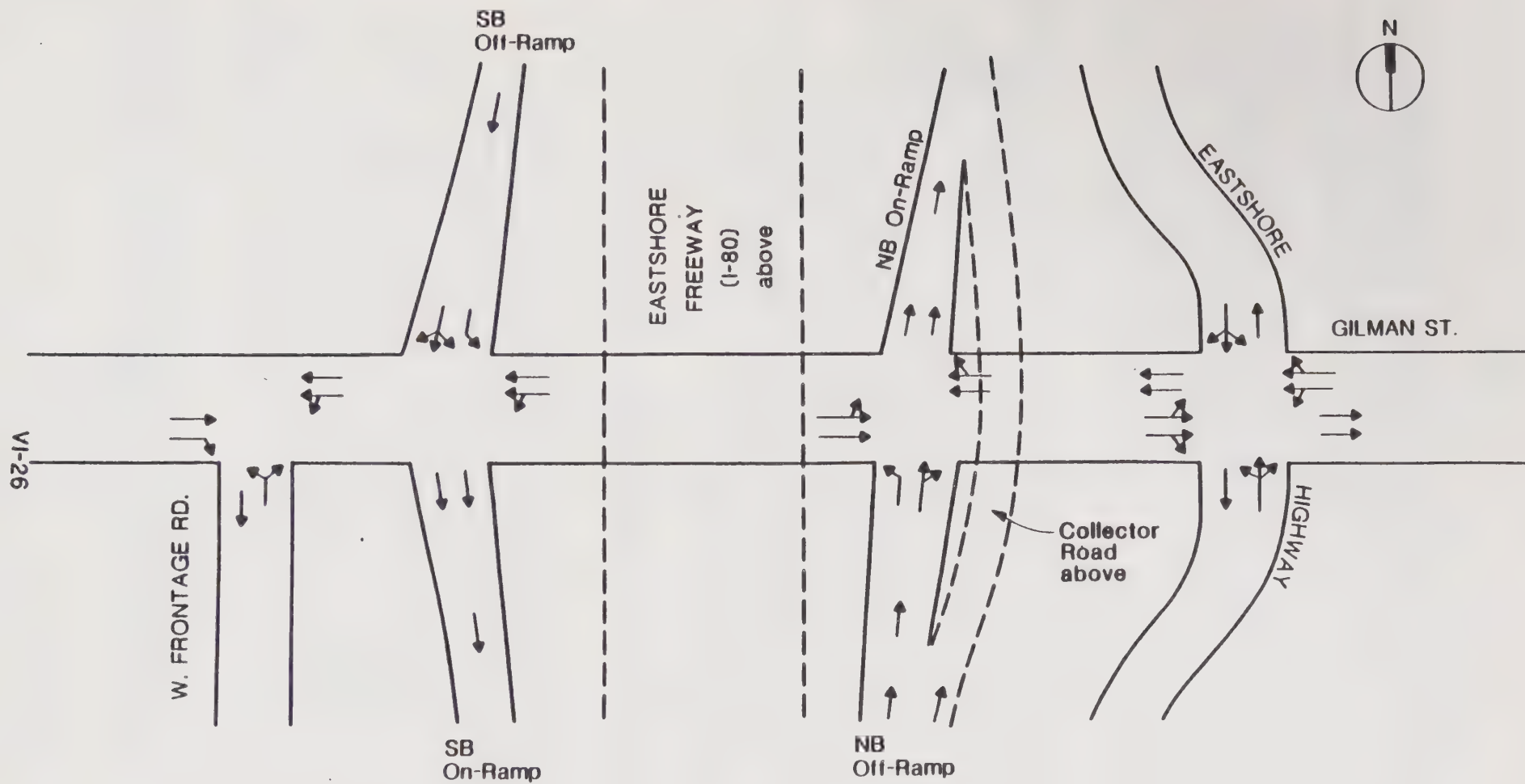


Figure VI-17
 CALTRANS PROPOSED GEOMETRICS
 AT GILMAN/I-80 INTERCHANGE

during the morning peak period). Under the current Caltrans plan for eastbound-only operations, the HOV structure would be empty all day except for the afternoon peak period. Even if the HOV facility were constrained to operate only northbound during the PM peak period, its two lanes through Emeryville represent additional northbound capacity beyond that created by the aforementioned freeway widening.

A median lane reserved for HOV's also is proposed on SR 17/I-180 southbound at Buchanan Street to allow HOV's to bypass any AM peak period congestion occurring where SR 17/I-180 merges with I-80 southbound. The HOV bypass lane would merge with the regular southbound freeway lanes by the time they reached Gilman Street.

Caltrans also proposes an HOV lane in the median of I-80 from Willow Avenue to just north of McBryde Avenue, where the HOV lane merges with the regular southbound I-80 freeway lanes. This facility would permit HOV's to bypass future southbound congestion at San Pablo Dam Road during the AM peak period.

As part of a separate but related project, Caltrans plans to install metering lights on the freeway on-ramps to control the rate at which traffic enters I-80 southbound between Solano and Ashby Avenues. The southbound on-ramps at Gilman Street and Ashby Avenue also are to be widened to add a lane enabling HOV's to bypass the ramp metering lights.

Status of Proposed Modifications./7/ The Final Environmental Impact Statement for the I-80/180 Operational Improvements Program received final approval by the Federal Highway Administration in February, 1984. The program's Preferred Alternative was divided into seven construction units, and the two units involving improvements in Berkeley have been programmed for construction within the next five years by inclusion in the 1984 State Transportation Improvement Plan. Unit 1 of the construction program includes the freeway widening from south of University Avenue to Central Avenue and modifications to the University, Gilman and Buchanan interchanges. Unit 3 of the construction program includes the widening of the Eastshore Freeway from the Distribution Structure to south of University Avenue and the reconstruction of the Powell and Ashby interchanges. The I-80 HOV facility from the Distribution Structure to Ashby Avenue is Unit 5 of the I-80 Operational Improvement Program's Preferred Alternative.

Caltrans is currently preparing detailed designs of the proposed improvements and acquiring the necessary right-of-way along the freeway corridor. Construction of Unit 1 is programmed to begin during the summer of 1986 and last approximately three years. Unit 3 of the seven-part program and is scheduled to begin construction in the summer of 1987 and to be completed by the end of 1989. Construction on the HOV structure to Ashby Avenue is scheduled to begin in the summer of 1988 and to be completed by the end of 1990.

Impact of Proposed Modifications.

Short-Term Impacts. Caltrans' Preferred Alternative is projected to eliminate all northbound and southbound congestion on I-80 in the short term with the exception of AM peak period congestion westbound at the Bay Bridge toll plaza. Table VI-1 lists the short-term volume-to-capacity ratios that could occur at the study area intersections as a result of the proposed Caltrans modifications. These ratios indicate the percentage of intersection capacity utilization assuming traffic volumes remain at their current levels, the completion of the I-80/180 Operational Improvements Program and no diversion of traffic from the freeway. In reality, by the time the proposed improvements were completed there would probably have been some growth in traffic volumes and some traffic would probably still continue to divert from the freeway even with reduced freeway congestion.

Operating conditions at all four interchanges serving the Berkeley waterfront would benefit from the proposed Caltrans modifications with conditions at Gilman, University and Ashby improving the most. The Gilman Street interchange v/c ratios would drop to 0.51 during the AM peak hour and to 0.67 during the PM peak hour due to the elimination of freeway diversion to West Frontage Road. The west side of the University Avenue interchange would experience an even greater decrease in intersection utilization than Gilman Street with an AM peak hour v/c ratio 0.34 and a PM peak hour ratio of 0.36. Even with the consolidation of the I-80 southbound on- and off-ramp intersections with West Frontage Road into a single intersection, the removal of up to 1800 vph southbound and 650 vph northbound produces an AM peak hour v/c ratio of 0.33 and a PM peak hour ratio of 0.30.

Although the Powell Street interchange utilization would improve due to the removal of diverting traffic and simplification of the Powell Street intersections, its improvement is not as marked as the other three interchanges. One factor restricting the improvement at the Powell Street interchange is the proposed relocation of the southbound on-ramp from Powell Street to West Frontage Road. Relocating the on-ramp forces all traffic from the Emeryville peninsula to turn north onto the frontage road from eastbound Powell Street producing very high volumes of left turns which consume capacity at the Powell/West Frontage Road intersection. Another factor limiting the potential benefits at the interchange is the high volume of right turns from the northbound off-ramp onto eastbound Powell Street. Under signal phasing many of these right turns can be made while the northbound off-ramp approach has a red light ("right-turn-on-red"). The reduced number of signal phases and modified interchange traffic patterns produced by the Caltrans changes would reduce the opportunities for right turns on red and require that more interchange capacity be assigned to these turns.

Although Table VI-1 indicates no change in the v/c ratios at the University/Sixth Street intersection, this is only because inadequate data were available to estimate the amount of freeway traffic diverting through the intersection. Elimination of northbound freeway congestion in the afternoon would probably result in some reduction of the northbound

volumes on Sixth Street, and southbound volumes on Sixth also would probably be reduced by improvements in AM freeway operations. The construction of the new two-way ramp connection from University Avenue to Eastshore Highway mentioned earlier could be expected to intercept some of the existing southbound right turns on Sixth Street further reducing capacity utilization and queue lengths.

No improvement in conditions at the University/San Pablo Avenue intersection is predicted, but it too could benefit if freeway conditions improve enough to attract some north-south traffic currently using San Pablo Avenue.

Long-Term Impacts. Projected growth in traffic demand in the I-80 corridor by the year 2005 is, however, projected by Caltrans to exceed the northbound capacity of the freeway at Ashby Avenue during the PM peak period and the southbound capacity of both I-80 at San Pablo Dam Road and SR 17/I-180 at Buchanan Street during the AM peak period. The fact that Caltrans' 1980 projections of year 2005 freeway conditions assumed roughly one percent per year growth in traffic from Emeryville to Richmond indicates that potential Emeryville redevelopment, Berkeley waterfront and downtown development and Albany waterfront development could consume the increased freeway capacity at a much faster rate than projected.

Even without any unanticipated growth in traffic from development along the Eastshore, Caltrans predicted that northbound freeway congestion would extend from Ashby Avenue to the eastern end of the Bay Bridge during the PM peak period by the year 2005. Although the proposed widening of northbound I-80 between Powell Street and Ashby Avenue from four lanes to five would eliminate one factor creating the current backup at Ashby in the afternoon, no new northbound lanes would be added to handle the influx of northbound on-ramp traffic from Ashby. Eventually freeway and on-ramp volumes would increase to a level that exceeded the capacity of the freeway, and traffic would begin to back up behind the point where the on-ramp merged into the northbound freeway lanes. Freeway diversion due to this congestion was projected to exceed current levels by an additional 780 vehicles during a four-hour PM peak period.

The fact that almost all of the existing freeway bottlenecks are projected to re-occur by 2005 with traffic diversion levels exceeding current volumes indicates that almost all of the short-term improvements shown in Table VI-1 would probably be lost in the long term. The one exception would be the capacity of the underutilized Ashby Avenue interchange. Reconstruction of the interchange to provide full directional access would create additional waterfront access capacity that does not presently exist and which could help reduce the intersection utilization at the other three interchanges by providing an opportunity for a better distribution of traffic among the interchanges.

TRANSIT

Existing Conditions

AC Transit. Transit service to the Berkeley Waterfront is currently supplied by the Alameda Contra Costa (AC) Transit District. Direct service to the waterfront is provided by Route 51M. Five additional transit routes are located within one-half mile of the site, but do not provide direct service. These include the 37 line providing express service within the Eastbay, and Routes FX, FXX, GX, HX, and L providing transbay service between the Eastbay and San Francisco. Refer to Figure VI-1 for the location of these routes.

Route 51M, which extends to the Berkely Marina along University Avenue, operates with an average headway of 20 minutes throughout the day on weekdays and 25 to 30 minute headways on Saturday and Sunday (see Table VI-3). This route links the Berkeley waterfront with downtown Berkeley, the University of California, and downtown Oakland and Alameda via College Avenue and Broadway. Transfers to the BART system are possible at the Berkeley BART station in downtown Berkeley.

Passenger load counts couducted by DKS Associates along the 51 route from downtown Oakland to the Berkeley waterfront indicate that the 51 line currently operates at or near capacity with an average load factor (the ratio of passengers to seating capacity) of 0.84 in this direction during the AM peak hour./8/ AC Transit's service objective is not to exceed a load factor of 1.25. The highest demand segment of the route is located between the Rockridge BART station and the University of California, with passenger demand exceeding seating capacity for an average load factor of 1.13 on this segment. From downtown Berkeley to the waterfront, the ridership drops off significantly (average load factor 0.55) and approaches zero at the Berkeley Marina.

Additional passenger counts were conducted at Sixth and University during the PM peak period and at University and Shattuck during the morning and evening peak periods to determine the transit capacity potentially available to serve the waterfront (see Table VI-4)./9/ During the morning peak, the average load factor on buses departing the downtown and heading westbound on University was 0.44. Buses entering the downtown from eastbound University had a slightly higher average load factor of 0.48. Load factors during the evening peak period were comparable, with a 0.44 average on buses departing the downtown and travelling westbound on University and a 0.43 average load factor for buses entering the downtown from eastbound University.

Route 37, an eastbay express line which originates at Dwight and Crescent, operates on University Avenue between Sixth Street and the downtown. Although the 37 line does not directly serve the waterfront, it provides a transfer opportunity to the 51M line at Sixth and University. This route offers service from West Berkeley to Merritt College via Ashby Avenue, Tunnel Road, and the Warren Freeway. Service is provided at 60 minute headways throughout the day during the week. This service is supplemented

TABLE VI-3: TRANSIT SERVICE WITHIN ONE-HALF MILE OF THE BERKELEY WATERFRONT - SERVICE FREQUENCY

Line ----	AM Peak -----	Midday -----	Approximate Headways			Sunday -----	Weekday Service Duration -----
			PM Peak -----	Evening -----	Saturday -----		
37	60	60	60	--	--	--	7:00AM-6:00PM
51M	20	20	18	20	25	30	6:30AM-11:00PM
FX	(a)	--	10	--	--	--	7:30AM-8:30AM
FXX	5-10	--	5-10	--	--	--	5:00PM-6:15PM
GX	9	--	9	--	--	--	6:45AM-9:00AM
HX	12-15	--	12-15	--	--	--	4:40PM-6:45PM
L	6-12	--	6-12	--	--	--	6:00AM-9:00AM
							4:00PM-7:00PM
							4:00PM-7:30PM
							5:30AM-10:00AM
							3:00PM-7:30PM

(a) Line FX operates on Powell Street during the AM peak.

SOURCE: AC Transit Schedules.

TABLE VI-4: AC TRANSIT OBSERVED LOAD FACTORS (a)

Location of Count -----	Time of Day -----	Line ----	Average Load Factor -----
Univ. and Shattuck, westbound	AM Peak	37,37U	0.17
		51M	0.44
Univ. and Shattuck, eastbound	AM Peak	37,37U	0.25
		51A	0.48
Univ. and Shattuck, westbound	PM Peak	37,37U	0.16
		51M	0.44
Univ. and Shattuck, eastbound	PM Peak	37,37U	0.28
		51A	0.43
Univ. and Sixth, eastbound	PM Peak	37,37U	0.07
		51A	0.19
		GX	0.71
		FX,FXX	0.50
		HX	0.86

(a) Load Factor indicates the ratio of passengers to seating capacity.

SOURCE: DKS Field Counts, December 13,21, 1984.

during peak hours by the 37U which operates at 30 minute headways and provides service to the University. Route 37 does not operate during evening hours or on the weekends.

The load factor on the 37 and 37U lines averages 0.25 or less, approaching and departing the waterfront. During the morning peak, westbound on University at Shattuck, the 37 line buses averaged a 0.16 load factor. During the PM peak period, eastbound buses departing University and Sixth had an average load factor of 0.07 and an average load factor of 0.25 upon departure from University and Shattuck.

The remaining four bus lines within one-half mile of the site are the transbay bus routes serving downtown San Francisco during the commute hours. Presently, these lines are not oriented toward servicing the waterfront; but this service could be created with the addition of a stop at the Gilman or University Avenue interchanges.

Route FXX, originating in Albany, operates at five to ten minute headways during the peak periods along University Avenue and enters the freeway at the University Avenue interchange. Route FX, also originating in Albany, operates eastbound on University Avenue during the afternoon peak period, but operates westbound on Powell Street in the morning peak. By policy, both lines do not allow local passenger access beyond the North Berkeley BART station in order to preserve bus capacity for transbay service. Passenger counts indicate an average load factor of 0.50, at Sixth and University, on these two lines during the afternoon peak period.

Route GX operates between Albany and San Francisco via San Pablo Avenue and the University Avenue interchange. Headways on Route GX are 9 minutes and the average load factor eastbound during the PM peak period is 0.71.

Route HX connects El Cerrito to San Francisco and runs on University Avenue during the peak periods. The HX line currently operates at 12 to 15 minute headways with an average eastbound PM peak load factor of 0.86. The final transbay route considered is the L, operating on I-80 past the waterfront and connecting Richmond and San Francisco. This line operates on six to twelve minute headways and carries almost no passengers in the AM off-peak direction (from San Francisco to Richmond).

Route 52, which currently operates on Sixth Street from Cedar to UC Village, provides local east/west service in North Berkeley as well as north/south service along Cedar Street in West Berkeley. This route presents an additional option for service extension to the Berkeley waterfront due to its proximity to the Gilman Street interchange.

Based on field observations conducted by DKS Associates, it appears that the opportunity for accommodating additional transit ridership exists on all transit routes serving or potentially serving the waterfront. Although specific data verifying these counts is not readily available from AC Transit, conversations with AC staff indicate that the load factor counts for the transbay lines, in particular, may be on the low side. Their data indicate that the transbay lines are in fact operating at or

near capacity, which has prompted the restriction of local passenger pick-ups and drop-offs on these lines./10/

BART. Presently, AC Transit Route 51M connects the Berkeley waterfront with the downtown Berkeley BART station. No direct service is provided to the North Berkeley BART station, but the station is within four blocks walking distance of University Avenue and Route 51M. Both BART stations provide direct service to the Westbay and parts of the Eastbay via the Richmond/Daly City and the Richmond/Fremont lines. Access to the Concord/Daly City line requires a transfer at the MacArthur BART station.

Ridership figures from 1983 for the Berkeley BART station indicate an average of 8,222 daily exits./11/ Berkeley has the second highest station activity level on the BART system, outside of downtown San Francisco. In contrast, the North Berkeley BART station averages 2,206 daily passenger exits, making it the lowest activity level station on the BART system.

The load factors on the BART lines serving the Berkeley and North Berkeley stations range from 0.70 to 1.52, with the transbay service experiencing the most critical crowding conditions (see Table VI-5). The Richmond/Fremont line affords the greatest opportunity at present for absorbing ridership increases in the Eastbay.

Berkeley Trip. The Berkeley Trip office, established in conjunction with RIDES for Bay Area Commuters, is a local ride-sharing office which promotes alternatives to drive-alone trip making. It serves an information/marketing/brokerage function for ridesharing activities, contributes to transit planning and coordination, participates in parking policy development, and promotes bicycling as a viable commute alternative. Berkeley Trip works directly with developers and employers to set up customized ride share programs.

Proposed Transit Service Improvements

AC Transit. AC Transit is undertaking a comprehensive route restructuring study. Until this study is completed (anticipated completion by 1987 or 1988), no major route extensions or revisions are planned. Minor revisions to the routes mentioned above as outlined in the AC Transit Five Year Plan FY 85-89 that are to be considered for possible implementation in FY 84-85 are summarized below:

- o Line F - Route modifications and possible implementation of new express or limited stop service in response to major schedule adherence and passenger overload problems.
- o Line G - Extension of the northern end of the route to connect to El Cerrito Plaza BART and San Francisco.

TABLE VI-5: BART LOAD FACTORS - 1984 PM PEAK PERIOD (a)

Location -----	Route/Direction -----	Passengers -----	Load Factor -----
Transbay from Embarcadero	Daly City to Concord	12,098	1.33
	Daly City to Fremont	8,324	1.38
	Daly City to Richmond	5,571	1.22
North and East- bound from MacArthur	Daly City to Concord	12,297	1.34
	Daly City to Richmond	4,796	1.05
	Daly City to Fremont	1,565	0.63
Southbound from Lake Merritt	Daly City to Fremont	7,852	1.30
	Richmond to Fremont	3,183	1.11

(a) Representative PM peak weekday load factors for April-June 1984.

SOURCE: BART, Quarterly Performance Report on System Objectives, April-June 1984, August 1984.

- o Line 51 - Route modifications and possible implementation of new express or limited stop service in response to major schedule adherence and passenger overload problems.
- o Line 52 - This route serves an important local circulation role, providing east/west service in North Berkeley. Since its inception in 1982, it has been envisioned that this route would be extended to the El Cerrito Plaza BART station.

It has been the policy of AC Transit in the past to provide service in the highest demand areas as a means of increasing transit productivity. Under current fiscal austerity conditions, the introduction of new service or increasing service frequency to high demand areas usually involves the shifting of existing transit stock, rather than a net expansion of service. Therefore, if the Berkeley waterfront development generates new transit demand, service reevaluation will occur to determine if expanded transit service is warranted.

There are two additional considerations that AC Transit will take into account in evaluating the establishment of transit service for the waterfront. The first consideration relates to design of the development and whether it is conducive to transit use, reflecting a concentration of activity centers, a level of intensity that can support viable transit service, and avoidance of major expanses of parking. The second consideration relates to financing of service expansion. Although no formal policies have been established, the district is exploring the concept of assessment districts to fund transit service expansion required as a result of new development.

BART Service Improvements. BART plans major service improvements over the next five years in response to increasing ridership growth. The BART 1984 Short Range Transit Plan assumes a 5.3 percent annual regional growth rate in travel demand through 1989. During that same period, a 71 percent systemwide increase in capacity is planned. The following key improvements are programmed to achieve the capacity increases and significant headway reductions in response to this demand: train control modifications, completion of fire-hardening, delivery of 150 new C-cars, a third downtown Oakland track (KE track), and the Daly City turnback.

With the headway reductions, train allocation will be adjusted in response to projected corridor demand. Although the Richmond/Daly City and the Richmond/Fremont lines would, under normal growth requirements and current vehicle allocation conditions, have extra capacity available by 1989, the shifting of service will force these lines to accept higher load factors in keeping with the rest of the BART system during the peak demand periods. BART envisions that the proposed service build-up will meet their service objectives, of a 1.5 load factor in the peak hour and 1.25 load factor in the balance of the peak period, systemwide. However, as a result of the increasing demand and the reallocation of trains, increases in load factors are projected on most lines.

Impacts of Proposed Modifications.

AC Transit. There are two significant constraints to short-range transit service extension or increased frequency of service to the waterfront, stemming from the currently programmed improvements and the stringent financial situation at AC Transit. AC Transit's current service enhancement priorities in West Berkeley are oriented toward existing areas of underserved demand -- not the waterfront. The proposed modification of routes, such as the extension of the 52 to Albany, would preclude possible rerouting to the Berkeley waterfront.

In addition, service to the Berkeley waterfront must compete on a performance level systemwide. Given the current financial constraints, it may be determined that all new service must be partially or wholly financed by the developer or employer creating the new demand.

The plan for a major reevaluation of the AC bus route structure, however, provides a unique opportunity for the waterfront planning process to affect transit service decisions for this area. Rationalization of existing service (the elimination of less productive routes) elsewhere may present service expansion possibilities previously unavailable to the waterfront.

BART. The service improvements proposed by BART are expected to meet systemwide demand based on regional employment growth, which includes sizable components in the central core areas of San Francisco, Oakland, and outlying areas such as Concord and Walnut Creek. The impacts of additional demand placed on the system by the Berkeley waterfront would depend to a great extent on the trip patterns of the users and the nature of the land uses within the study area.

NON-MOTORIZED TRAFFIC

The design of the Eastshore Freeway at ground level along the waterfront limits east-west travel across the freeway to Powell Street, Ashby Avenue, University Avenue and Gilman Street. The high volumes of freeway-bound traffic at the interchanges of these streets with I-80, the narrow roadway widths and the number of unsignalized ramp intersections with these streets create a hazardous situation for east-west movements of bicyclists, pedestrians and the handicapped.

Existing Conditions

Bicycle Network. Although east-west vehicular access to the Berkeley waterfront is permitted at Powell, Ashby, University and Gilman, bicycle facilities spanning the freeway currently are provided only along Gilman Street and at University Avenue. The Gilman Street underpass of I-80 is signed as a bicycle route indicating that bicycles share the traffic lanes with motorized vehicles. Once on the west side of the freeway, no bicycle facilities are provided connecting Gilman Street to University Avenue to the south.

A bicycle route also is designated for east-west travel across the University Avenue interchange. Instead of sharing the traffic lanes with motorized vehicles, bicyclists must share the sidewalk on the south side of University Avenue with pedestrians. Access to a bicycle/pedestrian path beneath the elevated portion of University Avenue is provided at First Street. Bicyclists and pedestrians must walk across the northbound off-ramp to Eastshore Highway and up a flight of stairs to reach the sidewalk on the south side of the University Avenue overpass. Bicyclists are required to walk their bikes the overpass on the sidewalk and then must cross to the north side of University Avenue at West Frontage Road to reach the bicycle/pedestrian path extending to the Berkeley Marina along the north side of University Avenue. Although a bike path is provided to the marina, no north-south bicycle facilities are provided along West Frontage Road.

The extensions of Ashby Avenue toward the waterfront are considered freeway ramps, and access to non-motorized traffic is forbidden. Bicycle facilities also are not provided at the Powell Street freeway underpass although the presence of signal control at this interchange would offer some protection to bicyclists.

Pedestrian Facilities. Provisions for east-west pedestrian access to the Berkeley waterfront are similar to the bicycle facilities. Gilman Street provides sidewalks on both side of the street under the freeway. No sidewalks are provided along West Frontage Road between Gilman Stret and Powell Street. Pedestrian access at University Avenue is limited to the south sidewalk on the freeway overpass and the bicycle/pedestrian path along the north side of University Avenue to the marina, both of which must serve two-way pedestrian and bicycle traffic. Pedestrian access at the Ashby Avenue ramps is forbidden. Powell Street has sidewalks on both sides of the street under the freeway with crosswalks at the signalized intersections.

Handicapped Facilities. None of the east-west routes across provides wheelchair ramps at the crosswalks. The stairs to the bicycle/pedestrian path across the University Avenue interchange and the non-motorized traffic restriction at Ashby Avenue prohibit direct wheelchair access at these two locations. The width of the bicycle/pedestrian path along the north side of University Avenue to the Berkeley Marina is not adequate to accommodate wheelchair traffic too. Although sidewalks, crosswalks and pedestrian signal phases are provided at the Powell Street interchange, no wheelchair ramps are provided.

Proposed Improvements

The Caltrans I-80/180 Operational Improvements Program recognized the need for improved non-motorized access across the freeway. Included in the Caltrans project are several bicycle/pedestrian facility improvements that provide better east-west access as well as complementing a proposed East Bay Shoreline Park along the waterfront from Richmond to Emeryville.

Bicycle Facility Improvements. Although Caltrans proposes no changes to bicycle access at Gilman Street and Powell Street, it does plan to improve access at University Avenue and add bicycle/pedestrian facilities to the Ashby Avenue interchange. The stairs and south sidewalk at University Avenue would be replaced by a separate two-way ramped bicycle/pedestrian structure over the freeway on the south side of University Avenue. Direct access would be provided on the east from Bolivar Drive in Aquatic Park and to Second Street on the the south side of the University overpass. On the west, the facility would pass under the new southbound on-ramp and cross West Frontage Road at grade.

As part of the reconstruction of the Ashby Avenue interchange, a bike lane would be constructed on each side of the Ashby overpass from the new connection to Bay Street to West Frontage Road. A two-way bicycle/pedestrian path would be provided on the south side of Ashby Avenue from the new Bay Street connection to Seventh Street. Bike lanes also would be constructed on both sides of the new Bay Street connection from Ashby to Bay Street.

No bicycle facilities are proposed by Caltrans for the Powell Street interchange. Along the waterfront area one major improvement proposed by Caltrans is the construction of bike lanes along both sides of West Frontage Road from Gilman Street to Powell Street.

Pedestrian Facility Improvements. Caltrans proposes to provide pedestrian access between Bay Street and the waterfront along the south side of the new Bay Street connection and the new Ashby Avenue overpass. All of the other pedestrian facilities would be the shared bicycle/pedestrian facilities described above.

Handicapped Facility Improvements. No specific improvements in handicapped facilities are mentioned in the I-80/180 Operational Improvements Program. Although the new bicycle/pedestrian overpass at University Avenue would eliminate the current wheelchair barrier represented by the existing stairs, the slope and width of the proposed structure would probably prevent its use by people in wheelchairs.

Impact of Proposed Improvements

The primary effect of the Caltrans improvements for non-motorized traffic would be to increase and improve access to and along the waterfront. The design of the facilities is oriented more toward accommodating recreational needs than possible future commuting patterns to the Berkeley waterfront. There still is no strong east-west link between the waterfront and the Berkeley bikeway network on the east side of the freeway. The University Avenue bicycle/pedestrian facility terminus location on the west side of the Southern Pacific railroad tracks makes bicycle/pedestrian access from the east difficult and roundabout. The new bike access at Ashby Avenue also lacks the necessary connections to the Berkeley bikeway network to provide high visibility and usage.

CONCLUSIONS

Inadequate freeway capacity and existing congestion on I-80 limit access to the Berkeley waterfront from the north during the AM peak period and from the south and to the north during the PM peak period. The presence of AM southbound and PM northbound congestion between the Bay Bridge and Ashby Avenue causes the diversion of traffic from the freeway to parallel routes such as West Frontage Road, Sixth/Seventh Street and San Pablo Avenue. The lack of full directional access to the waterfront at the Ashby and University Avenue interchanges shifts the demand for northbound I-80 access to the Gilman and Powell Street interchanges resulting in an uneven distribution of interchange traffic.

Although freeway diversion places an unnecessary traffic burden on the intersections and interchanges serving the waterfront, a key constraint on access is the operational complexity of the traffic "gateways" to the site. All traffic -- whether it be regional traffic on the freeway or local traffic on public streets east of the freeway -- can only reach the Berkeley waterfront by passing through one of four interchanges: at Powell, Ashby, University or Gilman. The close spacing of intersections at the Gilman, University and Powell interchanges creates operational problems which reduce the traffic capacity of the interchanges. A good example of this problem is the Powell Street interchange where the complex traffic movements and minimal storage area between intersections forced Caltrans to operate the three signals in the interchange as a single intersection. Providing a separate green phase for each of the five approaches to the interchange increases delays on the individual approaches and reduces the capacity of the interchange. Although the two intersections on the west side of the University Avenue interchange and the four intersections at the Gilman Street interchange are currently unsignalized, their close spacing creates the same type of operational problems as at Powell with the resultant loss in capacity.

Although vehicle demand in the I-80 corridor will continue to increase through the year 2005, Caltrans' proposed widening of the freeway should provide initial relief from the AM southbound and PM northbound congestion that is currently being experienced. This reduction in freeway congestion could be expected to reduce the amount of northbound and southbound freeway traffic currently diverting to parallel routes such as West Frontage Road and Sixth/Seventh Street. Reconstruction of the Ashby and University Avenue interchanges to provide full directional access would spread the traffic demand more evenly to the Gilman, University, Ashby and Powell interchanges. The reduction in freeway diversion and better utilization of the Ashby and University interchanges would result in fairly low levels of interchange utilization with considerable capacity available to accommodate additional traffic from new development in the waterfront area.

At some time before the year 2005, northbound and southbound traffic demand on I-80 during peak periods is projected to exceed the increased capacity of the freeway producing congestion and freeway diversion exceeding current levels. If this were to happen, waterfront traffic

capacity would be limited to the amount of additional capacity created by the reconstruction of the Ashby Avenue interchange unless further improvements were made to the interchanges.

Potential modifications would be limited by the willingness of Caltrans to approve the changes, the need for additional right-of-way along the waterfront and the costs and potential benefits of the improvements. Any widening of freeway on-ramps could produce freeway volumes at the merge point with I-80 that exceed the capacity of the freeway lanes. If this were the case, Caltrans would probably be unwilling to approve the ramp widenings. It should also be remembered that the effectiveness of any on-ramp widenings would depend on the ability of traffic to get through the traffic signals to the ramps. Increasing ramp width does not improve development potential if intersection capacity prevents utilization of the additional ramp lanes. Widening of off-ramps is an improvement that may receive little opposition from Caltrans and whose feasibility would depend on the availability of right-of-way. Widening of West Frontage Road or the east-west arterials would also increase capacity, but would be expensive and probably require additional environmental impact studies.

Under current transit service conditions, there is available capacity on the 51 line to accommodate growth in the Berkeley waterfront. Unutilized capacity is available primarily in the segment of the Route 51 between the waterfront and downtown Berkeley. Other segments of this line, beyond the UC campus, are already experiencing crowded conditions. Route 37 (and 37U) also has available capacity to accommodate transfers from the 51 line.

Although the transbay routes along University Avenue and the I-80 corridor are already at or near capacity, it is reasonable to consider the potential for the addition of a stop serving the Berkeley waterfront -- in fact, Caltrans has proposed freeway bus stops at the Gilman northbound on-ramp and the Ashby and Powell southbound on-ramps. Accommodation of any new transit demand at the waterfront may require the addition of buses during the peak periods in the peak direction. If the site generates a greater volume of inbound transit ridership during the AM peak period, the a better balance in directional load factors could be achieved at no additional cost due to the utilization of unused off-peak direction capacity (depending upon the origin of the trips).

The master planning effort underway at AC Transit is intended to reevaluate the structure of transit routes in the AC District. As previously noted, this provides an opportunity to identify the projected needs of the Berkeley waterfront and potentially expand transit service to the waterfront in accord with service rationalization in other sectors of the transit district.

The BART lines serving the North Berkeley and Berkeley BART stations are anticipated to be able to meet the increasing demand for train travel over the next five years. However, the reallocation of BART trains within the system to respond to overcrowding on specific lines will limit the amount of capacity available to serve growth in the Berkeley waterfront in the

peak period direction. The opportunity for generating reverse commute trips, which take advantage of available capacity, does exist.

The Berkeley Trip office and the RIDES program, offer local mechanisms for coordinating transit and ridesharing activities. It is therefore assumed that a relatively high shared ride and transit mode split can be achieved on this site.

Given that the automobile is still the most frequently used form of transportation for most land uses, the traffic capacity of the four interchanges providing access to the Berkeley waterfront would probably be the key transportation constraint on waterfront development. Traffic conditions might not be as bad as Caltrans has projected if development were to occur at the waterfront instead of farther north on I-80 or if the travel patterns associated with waterfront land uses were oriented in the off-peak direction where more capacity existed. Development of a plan for the Berkeley waterfront should consider not only the short-term traffic capacity for development but also the lower, long-term traffic capacity and the need for additional improvements. It should also be remembered that the traffic capacity of the study area intersections serves not only the Berkeley waterfront but also downtown Berkeley, West Berkeley, Emeryville and Albany access needs.

NOTES ON TRANSPORTATION SETTING

/1/ Based on volume counts conducted by DKS Associates, November 22, 1983.

/2/ In order to provide a consistent base for comparison, all intersections are assumed to be signalized, and closely-spaced intersections are analyzed as a single, multi-phase signal.

/3/ For the purposes of analysis, the four intersections were assumed to be signalized and interconnected to operate as a single, five-phase signal.

/4/ Inadequate storage capacity on the approaches to the Powell Street interchange and a high percentage of trucks reduce the efficiency of traffic flow. Therefore, the theoretical capacity of 1500 vph was used in the analysis of this interchange.

/5/ U.S. Department of Transportation Federal Highway Administration and the State of California Department of Transportation, Operational Improvements to Routes I-80 and I-180 in Alameda and Contra Costa Counties Final Environmental Impact Statement: Vol. 1, September 1983, 241 pages.

/6/ Auxiliary lanes extend only from one freeway on-ramp to the next off-ramp to provide a longer maneuvering area for vehicles entering and exiting the freeway traffic stream.

/7/ Hilmer "Ace" Forsen, Caltrans, telephone conversation, September 18, 1984.

/8/ DKS Field Survey, December 13, 1984.

/9/ DKS Field Survey, December 13, 1984.

/10/ David Yazhari, AC Transit, telephone conversation January 17, 1985.

/11/ Bay Area Rapid Transit District 1984 Short Range Transit Plan, July 1984.

VII. Recreation and Open Space

ROMA

BERKELEY WATERFRONT PLAN

RECREATION/OPEN SPACE ANALYSIS

Prepared by ROMA Design Group

January 22, 1985

RECREATIONAL/OPEN SPACE ANALYSIS

INTRODUCTION

This recreational analysis draws together all existing information relevant to the site on current parks inventory, proposed open space and recreation improvements, identified demand or need for such facilities, and recognized deficiencies in the existing recreational system. This information is not compiled by any single agency, and hard conclusions are difficult to derive from the mass of unconsolidated, and sometimes conflicting, data. However, the Summary of Opportunities and Constraints at the beginning of the report documents conclusions on the major policy direction and any specific, generally agreed recommendations for the nine recreation/open space categories to be potentially located on the Berkeley Waterfront: regional open space, shoreline trail, sports facilities, environmental preserves, boating/marina facilities, visual/scenic activities, social/educational activities, fishing/beach activities, and overnight lodging/camping.

KEY AGENCIES AND ROLES

Four agencies emerge as the most likely recreation/open space service providers relevant to the Berkeley Waterfront: the State Department of Parks and Recreation, the State Coastal Conservancy, the East Bay Regional Parks District, and the City of Berkeley. Other agencies may play a role in the project, such as the funding sources described in the final section of this analysis, but these four are by far the most important sponsors of planning, development, and funding of open space on the Berkeley Waterfront site.

STATE PARKS AND RECREATION DEPARTMENT

The role of the State Parks Department as it relates to the Berkeley Waterfront is to provide large outdoor recreation facilities accessible to, and serving the needs of, residents of the whole Bay Area region. The strategic location of the Berkeley site at the heart of the state's second largest metropolitan complex, and adjacent to the prime scenic and recreational amenity of the Bay, makes the site a prime opportunity area from the perspective of the State Parks Department. The evidence of the priority placed on open space at the site is the East Bay Shoreline Park Feasibility Study published by the Department in 1982, and discussed in a subsequent section of this analysis.

STATE COASTAL CONSERVANCY

The role of the Coastal Conservancy, as relates to the Berkeley site, is that of a potential sponsor of planning and development activities. Already the Conservancy has hosted a series of community workshops covering the East Bay Shoreline Park and funding/development options for its various components.

They also sponsored an independent visual analysis and a design charrette concerning the future of the East Bay Shoreline. (For further detail, see subsequent section on Coastal Conservancy proposals.)

The Conservancy's jurisdiction is the entire California coastline zone, including San Francisco Bay. Its major policy priorities are twofold: preservation and enhancement of coastal wetlands and wildlife habitat, and promotion of public access to the shoreline. Clearly, both of these priorities are relevant to the Berkeley Waterfront, and it is anticipated that the Conservancy will play a continuing role in planning for the site.

EAST BAY REGIONAL PARKS DISTRICT

The jurisdiction of the EBRPD covers the majority of Contra Costa and Alameda Counties. For this area, the role of the EBRPD is to acquire, develop, and operate regional parklands. Their major policy thrust is to balance increased recreational opportunities with protection of valuable natural environment.

The District's long-term goal is for a "Balanced Parkland Plan" to equitably distribute both existing and new regional parklands. In the selection of specific park sites, priority is given to activities deemed deficient, and the allocation of resources is proportional to the concentration of population.

Among the "potential sites" listed in the 1980 Master Plan are the Berkeley/Emeryville Shoreline, the Albany Shoreline and, separately listed, the Berkeley Waterfront itself. All projects relating to Bay shoreline access are recommended for joint study and implementation with federal, state and local agencies.

CITY OF BERKELEY

If potential open space and recreational facilities at the Berkeley Waterfront are looked upon as chiefly local-serving, then the City is the main entity responsible for implementing such facilities. However, the City has limited resources, and its current policy priorities emphasize improvement of existing parks rather than acquisition and development of new ones. The major exception to this policy is the City's commitment to completion of the remaining 80 acres of North Waterfront Park. Even this project has been mentioned as a candidate for transfer to the State Parks system as part of larger East Bay Shoreline Park.

OTHER AGENCIES

There are a number of other agencies which will appear in the following sections as recreation providers or funding sources. They will be briefly described below:

Federal Agencies

The National Park Service is a significant recreation supplier in the Bay Area, although it owns very little land in Alameda or Contra Costa counties. Other federal agencies of possible relevance to recreational and open space on the Berkeley Waterfront are the U.S. Fish and Wildlife Services and the Army Corps of Engineers. Possible federal funding services will be described in the last section of this analysis.

East Bay Municipal Utility District

EBMUD's main responsibility is to provide water for Alameda and Contra Costa counties. However, as will be described in Existing Recreation Patterns, the agency does allow recreational use of some of its reservoirs and watershed lands.

Private and Quasi-Public Entities

The University of California and the Bay Area Rapid Transit District each administer a limited amount of open space, as described in Existing Recreation Pattern. Private recreation supplies are not addressed as part of this analysis, except as information about them is included in State inventories.

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EXISTING RECREATION PATTERNS

EXISTING REGIONAL-SERVING FACILITIES

There are four major groups providing regional recreational facilities relevant to the Berkeley Waterfront site: federal agencies (primarily the National Park Service), the State Department of Parks and Recreation, the East Bay Municipal Utility District, and the East Bay Regional Parks District.

Federal Recreation Areas.

Berkeley and the surrounding nine-county Bay Area fall within Planning District 4. The National Park Service is the largest public recreation supplier in that planning district, with 80,000 acres, of which only nine acres are within Alameda or Contra Costa Counties (see Table 2). Major National Park Service facilities are Point Reyes National Seashore in Marin County and the Golden Gate National Recreation Area in the City and County of San Francisco.

Other federal recreation suppliers within Planning District 4 are the U.S. Fish and Wildlife Service and the Army Corps of Engineers. The U.S. Fish and Wildlife Service is acquiring 24,000 acres of marshland along San Pablo Bay and the southern end of the San Francisco Bay for fish and wildlife habitats and associated recreational activities. The Army Corps of Engineers is at present developing recreational facilities at Lake Sonoma in Sonoma County for water-related activities as well as riding, biking and picnicking.

State Department of Parks and Recreation.

The State Department of Parks and Recreation is the second largest regional recreation provider in Planning District 4, with approximately 70,000 acres in 40 facilities (see table below).

Table 2. FEDERALLY MANAGED RECREATION AREAS
Planning District 4
National Park Service

County	Number of Developed Recreation Areas	Camp Sites	Picnic Tables	Developed Recreation Acres	Miles of Trail	Recreation Acreage
Alameda	0	0	0	0	0	0
Contra Costa	1	0	2	1	0	9
Marin	5	48	149	49	268	78,890
Napa	0	0	0	0	0	0
San Francisco	4	0	18	70	9	2,090
San Mateo	0	0	0	0	0	0
Santa Clara	0	0	0	0	0	0
Solano	0	0	0	0	0	0
Sonoma	0	0	0	0	0	0
Total	10	48	169	120	277	80,989

Others

Alameda	0	0	0	0	0	0
Contra Costa #1	1	0	30	20	0	771
Marin	0	0	0	0	0	0
Napa #2	1	8	0	23	0	470
San Francisco #3	1	0	0	0	0	221
San Mateo	0	0	0	0	0	0
Santa Clara	0	0	0	0	0	0
Solano	0	0	0	0	0	0
Sonoma #2	1	1	0	1	0	40
Total	4	9	30	44	0	1,502

1. Bureau of Reclamation
2. Bureau of Land Management
3. U.S. Fish and Wildlife Service

Source: Paris II
Public Land Ownership in California, 1977
State Lands Commission

C-7733C

TABLE 1

STATE MANAGED RECREATION AREAS

<u>County</u>	<u>Number of Developed Recreation Areas</u>	<u>Camp Sites</u>	<u>Picnic Tables</u>	<u>Developed Recreation Acres</u>	<u>Miles of Trail</u>	<u>Recreation Acreage</u>
Alameda	1	0	3	0	3	771
Contra Costa	2	60	225	68	35	13,554
Marin	5	81	265	65	95	12,257
Napa	4	35	38	4	15	3,492
San Francisco	2	0	0	0	0	128
San Mateo	11	142	175	85	39	5,458
Santa Clara	1	41	0	2	51	13,119
Solano	2	0	81	20	1	368
Sonoma	<u>12</u>	<u>235</u>	<u>222</u>	<u>75</u>	<u>127</u>	<u>21,511</u>
TOTAL	40	594	1,009	319	366	70,658

Source: PARIS II

Facilities are primarily located in the Western section of Planning District 4 in Sonoma, Marin, and San Mateo counties; only 20% of the acreage is in Alameda or Contra Costa counties.

Activities provided in State recreation areas are predominantly natural resource-oriented: camping, hiking, picnicking and water-related activities.

State Parks and Recreation areas near the Berkeley Waterfront are Robert W. Crown Memorial State Beach (managed by East Bay Regional Parks District and described within the EBRPD section) and Angel Island State Park.

Angel Island State Park, in the San Francisco Bay, is equidistant from San Francisco and Berkeley near the Marin County shoreline. The State Park is served by ferries from San Francisco and Tiburon. It consists of 758 acres, providing picnic and campsites, hiking trails, boat moorings and playfields.

East Bay Municipal Utility District

As part of its responsibility to provide water for Alameda and Contra Costa Counties, EBMUD owns five major reservoirs and watersheds totaling approximately 27,000 acres in the East Bay Hills.

EBMUD recreational facilities are divided into three types: watershed management preserves, recreation management areas, and educational use areas.

Watershed management preserves comprise 59 percent of EBMUD holdings. They are large areas serving agricultural, wildlife, or watershed purposes. They are not for recreational use; access is by permit only.

Recreation management areas, 33 percent of EBMUD lands, provide sites of various sizes for recreational activities to meet public demands for access. Some are developed recreational, intensive use areas for water-oriented activity, picnic and camping sites, conference centers, stables, golf courses, and similar activities. Some are undeveloped recreational areas of low-intensity use, such as trails or public access only. Some are special use areas such as vista points, historical sites, and small community parks.

Educational use areas, six percent of EBMUD property, provide for study of the ecology of natural environments. They are undisturbed sites with controlled access, low-density day use only.

Berkeley is a part of EBMUD's Northern East Bay District. This district includes San Pablo and Briones reservoirs and 9,320 acres of land adjacent to Tilden and Wildcat Regional Parks. These reservoirs serve the communities of Richmond, El Cerrito, Berkeley and Oakland. Both reservoirs are intensively used for recreational purposes such as fishing, boating, and nature study. EBMUD's Northern East Bay District also includes 1,000 acres of restricted-access natural area in the Siesta Valley just north of Route 24.

East Bay Regional Parks District

The East Bay Regional Parks District covers the majority of Contra Costa and Alameda Counties. It is composed of four subareas: Diablo, Amador Valley, the South Metropolitan Area, and the North Metropolitan Area, of which Berkeley is a part.

The EBRPD has six categories of facilities, each implying certain standards as to size and use: Regional Park, Regional Shoreline, Regional Preserve, Regional Recreation Area, Regional Trail, and Regional Wilderness.

Regional Parks are typically 500 or more acres, 70 to 90 percent of which is natural area and 10 to 30 percent a recreation unit. They are chosen for their outstanding natural features, and provide recreational activities compatible with the natural environment, such as camping, hiking, nature study, and horseback riding. Associated facilities may include trails, campgrounds, picnic areas, turfed meadow for sports and social activities, outdoor education, equestrian facilities, beaches, and archery.

This category of facility is not appropriate for the Berkeley Waterfront, since it requires a very large natural area.

Regional Shoreline is chosen for its significant recreational, educational, natural, or scenic value. It usually includes a variety of natural shoreline environments valued for scientific, educational, or environmental purposes. Where suitable, it can include recreation units(s) such as beaches, picnic areas, shoreline meadow, fishing or boating facilities, visitor centers, outdoor educational/interpretive facilities, view points, and concessions. EBRPD policy encourages maximum public access by means other than the private automobile, e.g., public transit, ferry, private boat, or bicycle.

This category of facility is highly suitable for the Berkeley Waterfront.

Regional Preserves are intended to protect features of outstanding natural or historic significance. They typically have minimal development, perhaps just a staging area and possibly an interpretive facility.

This category may be suited to the Brickyard mudflats, although most regional preserves are considerably larger areas.

Regional Recreation Areas are defined as 100 or more acres which provide a variety of outdoor recreational experiences on a site particularly suited to recreational activities of a regional significance. They are capable of withstanding intensive public use, and have proven recreational resources such as man-made or natural bodies of water suitable for swimming, fishing, boating, and picnicking. Wherever feasible, they include outdoor educational facilities and programs.

This category may be appropriate to some portion of the Berkeley Waterfront, perhaps incorporating the 90 acres of the North Waterfront Park.

Regional Trails must possess the following characteristics:

- Be a linear corridor which either connects regional parklands, links through other regionally significant scenic lands, or provides non-motorized access to the Bay or to a regional parkland for a major population center or mass transit terminal.

- Possess adequate adjacent land for appropriate staging areas.

- Be developed in conformance with "A Trail Manual for the East Bay Regional Parks District".

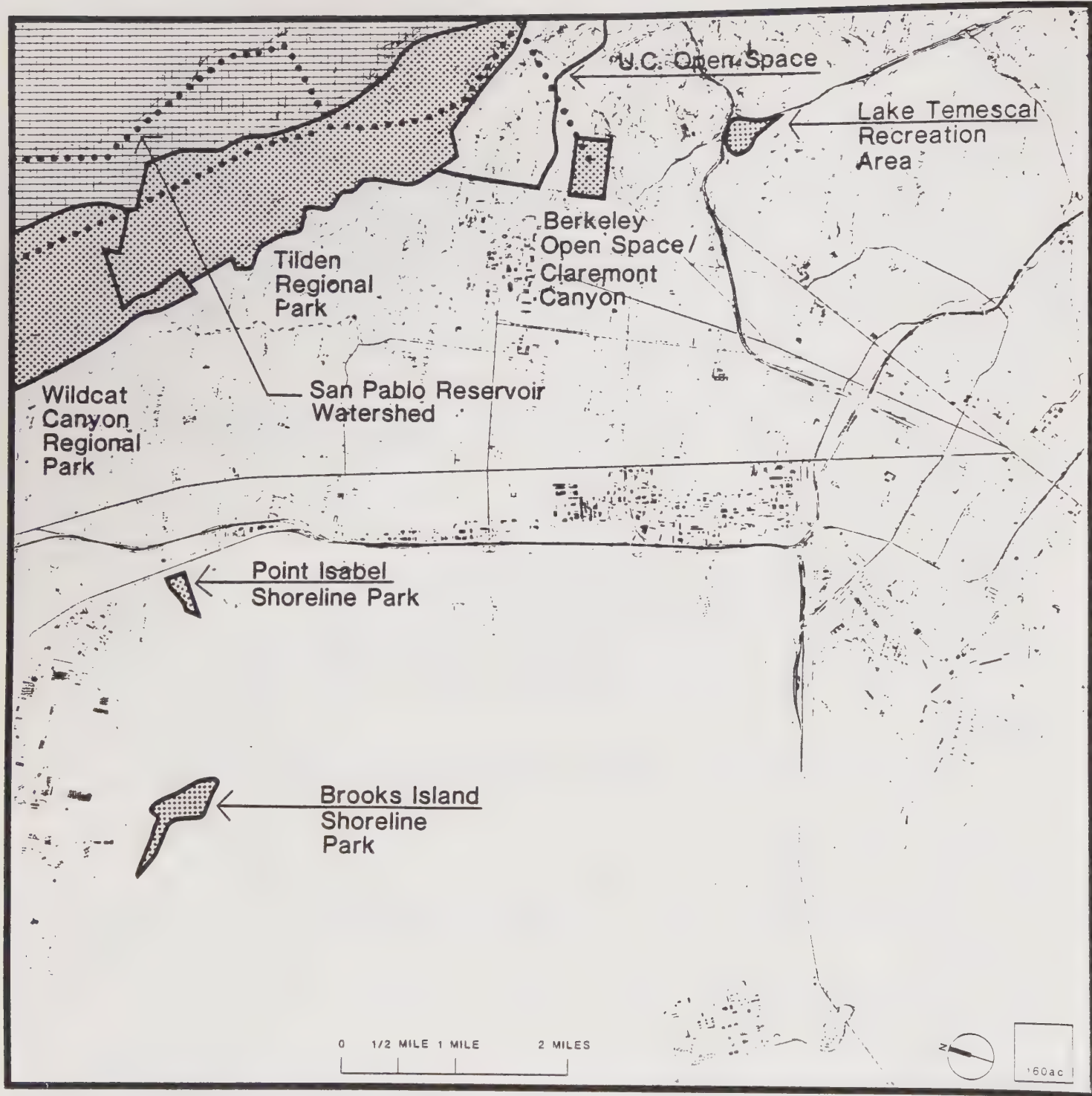
This category of facility is not only appropriate to, but has been consistently recommended for, the shoreline from Emeryville to Albany.

The North Metropolitan Area includes facilities of each of these types (see Table 3). The EBRPD facilities nearest to the Berkeley Waterfront are listed below (see Figure 1):

TABLE 3
REGIONAL RECREATIONAL FACILITIES

FACILITY	ACRES	OVERNITE CAMPING/ DAYCAMP	GROUPS	SOCIAL ACTIV- ITIES	BOATING/ WATER FACILITIES	VISUAL POTIV- ITIES	ENV. PRESERVES WILDLIFE SANCTUARIES	FISHING/ BOAT- ING ACTIVITIES	PUBLIC ACCESS TRAIL NETWORK
HERND WEST METROPOLITAN AREA									
REGIONAL PARKS									
WILSON CANYON	22.4	X GROUP CAMPING		X		X			X
CHARLES LEE TILLEY	3265	X GROUP CAMPING				X			X
REDWOOD	2225	X GROUP CAMPING	X	X		X			X
ANTHONY CHABOT	4335	X GROUP CAMPING	X	X	X	X		X	X
REGIONAL SHORELINE									
POINT PINOLE	2147		X	X		X		X	X
GEORGE MILLER, JR.	174		X	X		X		X	X
POINT DUBLIN	21			X		X		X	X
ROBERT DROWN	383		X	X	X	X		X	X
SAN LEONARD BAY	571		X	X	X	X		X	X
REGIONAL PRESERVE									
BROOKS ISLAND	77						X	X	
BERKELEY OPEN SPACE	60						X		
CLAREYON CANYON	28						X		
ROBERT STURLEY	381						X		
WALDESBERRY	118						X		
REGIONAL WILDERNESS	0								
REGIONAL RECREATION AREA									
KENNEDY GROVE	35		X	X					
TEHESORO	46		X	X				X	
COLE CANYON	102		X	X				X	
REGIONAL TRAILS									
SKYLINE NATIONAL TRAIL						X			X
BRIDGELINE FROM CHABOT TO WILSON									
NON-HERND FACILITIES:									
UNIVERSITY OF CALIFORNIA STRAWBERRY CANYON ECOLOGICAL RESERVE	731		X	X		X	X		X
EAST BAY P.W. UTILITY DISTRICT									
SAN PABLO/BRIDGES RES. 12,420				X	X	X		X	X
SATEWA/NECESSITA VALLEY WATERS-ED MGMT. AREA	11,345								RESTRICTED ACCESS



SOURCES: PARK AND RECREATION FACILITY INVENTORY, ALAMEDA AND CONTRA COSTA COUNTIES, EAST BAY REGIONAL PARK DISTRICT, 1975
AND MASTER PLAN, 1982. EAST BAY REGIONAL PARK DISTRICT



REGIONAL RECREATION AREAS

Figure VII-1

Legend

-  East Bay Regional Park District
-  East Bay Municipal Utility District
- Hiking and/or Riding Trails

BERKELEY WATERFRONT PLAN

ROMA
Planning and Urban Design

Anthony/Fleming Associates
Community Involvement

ESA
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Regional Parks: Tilden Park and the adjacent Wildcat Canyon Camp, totaling over 4,200 acres in the ridglands above the East Bay.

Regional Shoreline: Point Isabel, 21 acres of shoreline offering fishing and picnicking, approximately two miles north of the site in Richmond.

Regional Preserve: Berkeley Open Space, 80 acres adjacent to the old California School for the Deaf and Blind, and Claremont Canyon, 28 acres acquired recently as was recommended in Berkeley's 1977 Master Plan.

Regional Recreation Area: Temescal, 48 acres including a lake heavily used for swimming, fishing, picnicking, and sunbathing.

Regional Trail: The Skyline National Trail running along the ridgeline from Chabot to Wildcat Regional Park.

EXISTING LOCAL FACILITIES

The City of Berkeley is the local recreational service provider relevant to the site. The inventory of existing facilities is described below, and in the accompanying Table 4.

City Parks by Type.

City parks and recreation areas are classified into seven categories determined by the size of the facility and its primary use as follows:

Major Park and Recreation Centers: Citywide park facilities, which include a recreation building supporting many activities and an outdoor recreation area supporting recreational activities such as basketball, tennis, volleyball, and field sports.

Medium to Large Parks: Citywide park facilities, characterized by sites approximately five acres, without a recreation building, supporting a wide variety of outdoor recreational uses.

Small Parks: Neighborhood parks, characterized by sites approximately .5 acres (two to three city lots), generally consisting of a tot lot and/or a mini-park. Tot lots provide play apparatus for pre-school and elementary age children. A mini-park will include picnic facilities, benches, and lawn area.

Special Use Facilities: Parks serving special interest groups such as lawn bowlers, water skiers, model boat clubs.

Hill Parks: Parks located in the Berkeley Hills at rock outcroppings or vista points offering unique opportunities for rock climbers, walkers, and sightseers.

TABLE 4
CITY OF BERKELEY PARKS, BY GEOGRAPHICAL AREA

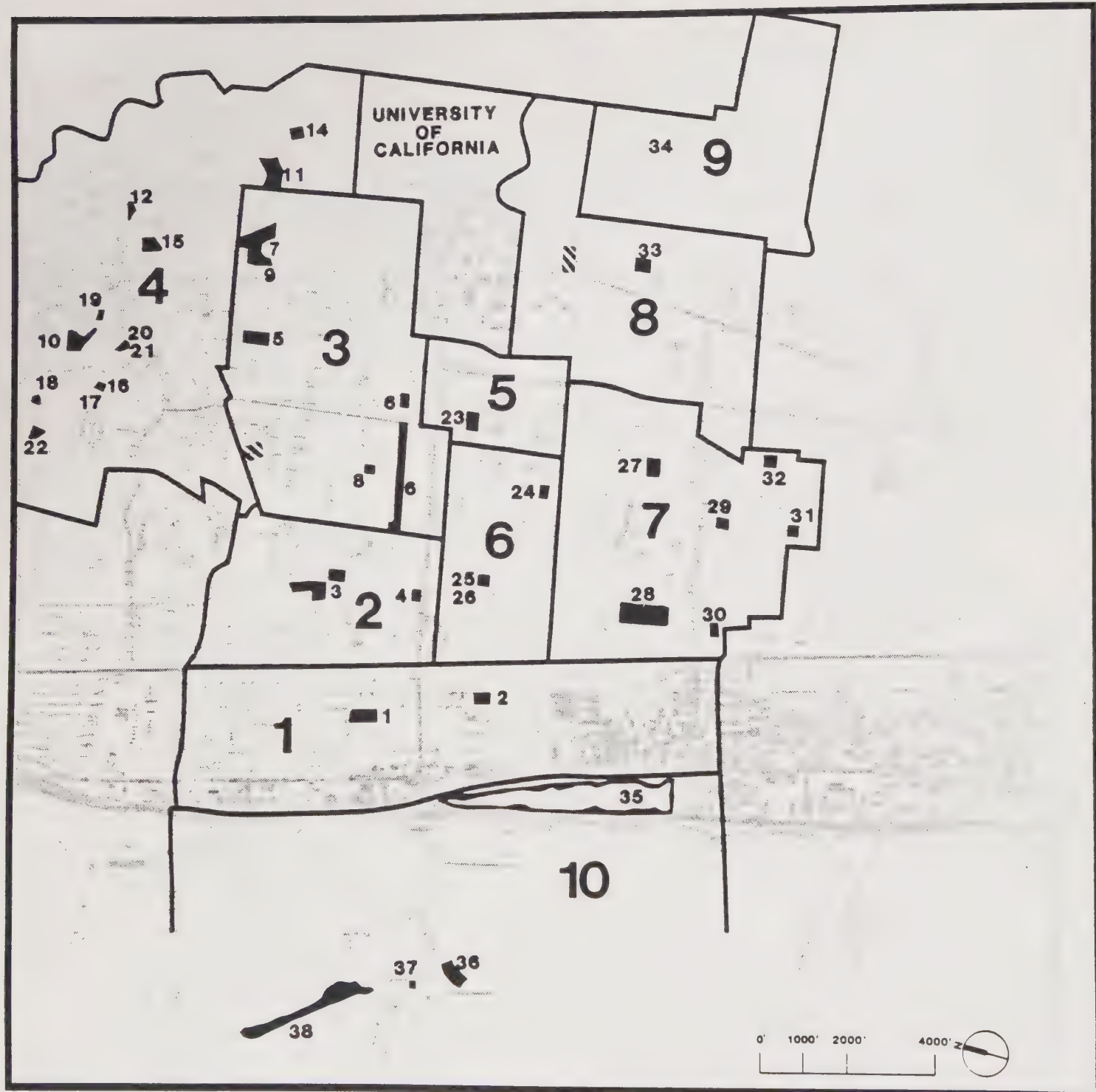
AREA	FACILITY	ACRES	TURFED MEADOW	TOT LOT	FAMILY PICNIC	GROUP PICNIC	RED. CTR.	SWIM- MING	FISH- ING	BOAT- ING	OTHER
WEST BERKELEY	1. JAMES KENNEY	4.25	X	X	X	X					Baseball, Red. Ctr., Tennis, Basketball Court
	2. COLUMBUS MINI PARK	0.97	X	X							
	* SR. CENTER										
NORTH-CENTRAL BERKELEY	3. CEDAR/ROSE	3.10									
	4. BERKELEY WAY	0.43	X	X							
NORTH-SIDE	5. LIVE OAK	5.52	X	X	X	X					Baseball, Tennis, Volleyball, Creek, Garden, Comm. Bldg.
	6. DOLANE PARK (HEARST STRIP)	9.60	X								
	7. DODD/NISS	10.60	X	X	X	X					Baseball, Nature Trail, Creek, Tennis, Volleyball
	8. MOORE TOT LOT	0.40	X	X							
	9. ROSE GARDEN	3.64	X	X	X	X					
	* SR. CENTER										
NORTH HILLS	10. JOHN HINKE	4.20	X	X	X	X					Comm. Ctr., Trails, Vista Point Amphitheatre
	11. GLENDALE/LALOMA	5.60	X	X	X						Baseball, Basketball, Vista Point
	12. PENNILLARD	5.90	X	X							Pinnacle Rock
	13. SPRUCE-MICHIGAN	1.15	X	X							Slide, Vista Point
	14. TERRACE VIEW	0.70		X							Basketball
	15. CRAGMONT	3.20	X		X						Climbing rocks, Vista Gardens
	16. CONTRA COSTA ROCK	0.20	X								Vista Point
	17. BULLIS VIEW	1.22									
	18. FREDERICK	0.24	X								Gardens
	19. BROTT'S ROCK	2.40									Paths, Climbing rocks
	20. INDIAN ROCK	1.22	X								Paths, Climbing rocks, Vista Point

TABLE 4 continued
CITY OF BERKELEY PARKS, BY GEOGRAPHICAL AREA

AREA	FACILITY	ACRES	STURPED	TOT. FAMILY	GRD.	RED. GRV.*	FIS.	BOAT	OTHER
			MEADOW	LOT	PICNIC	PICNIC	CTR. KING	ING	ING
							BEAD-		
	21. MORTAR ROCK	0.32							Gardens
	22. STONEFACE	0.72	X						Paths
DOAKS	23. CIVIC CENTER	2.52	X	X	X				Benches, Fountain
SOUTH-CENTRAL BERKELEY	24. ROOSEVELT TGT LOT	2.15		X					
	25. CHARLES DORR	0.60		X	X				
	26. BOWLING GREEN	1.81							Lawn Bowling
SOUTH- BERKELEY	27. GROVE PARK	2.50	X	X	X				Baseball, Basketball, Tennis
	28. SAN PABLO PARK	13.02	X	X	X	X			Baseball, Rec. Ctr., Basketball, Tennis
	29. PRINCE STREET	0.20		X					
	30. PARKER	0.20	X	X					
	31. 63RD STREET	0.20		X					
	32. GREG BROWN	2.60	X	X					Basketball, Benches
	* SOUTH BERKELEY SR. CENTER								
SOUTH-SIDE	33. WILLARD	2.70	X	X	X				Clubhouse, Tennis, Swim, Garden
CLAREMONT ELMWOOD	34. DONKEY ISLAND	0.32							
MARINA	35. ADLATIC PARK (LAND ONLY)	33.76	X		X	X		X	Boat races, Concessions
	36. S-PRESSID PARK	6.17	X	X	X	X		X	Natural areas
	37. HORSESHOE PARK	3.19	X						Benches, marina viewpoint
	38. N. WATERFRONT PARK	5.02	X		X				
TOTAL		140.33							

SOURCES:

1. LRRR Recovery Action Program City of Berkeley, 12/15/82
2. William Montgomery, Superintendent of Berkeley Marina



LOCAL SERVING PARKS

Figure VII-2

Legend

- City of Berkeley Parks
- Other Parkland Administered by U.C. or B.A.R.T.
- Park Study Area Boundary (Neighborhoods)

Park Study Areas

- | | |
|---------------------------|---------------------------|
| 1. West Berkeley | 6. South Central Berkeley |
| 2. North Central Berkeley | 7. South Berkeley |
| 3. Northside | 8. Southside |
| 4. North Hills | 9. Claremont-Elmwood |
| 5. Downtown | 10. Marina |

BERKELEY WATERFRONT PLAN

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Swim Centers: Standard competition pools and locker room facilities provided for both school and Berkeley resident use.

School Parks: Recreational facilities supported by joint city and school district efforts. Although important recreational facilities, they are not included in our inventory. This omission is justified, in view of the fact that the California State Outdoor Recreation Plan proposed standard acres of parkland per 1,000 population excludes school playgrounds from the statistical inventory.

City Parks by Geographic Distribution.

The Berkeley Master Plan revision of 1975 divides the city into 21 planning districts. For the purpose of describing park distribution, impact, and supply/demand statistics, these 21 districts are combined into 10 park study areas (see Figure 2). The 10 aggregate areas are based on proximity to major parks, neighborhood boundaries, and the availability of corresponding socio-economic data.

Area #1, West Berkeley: The area contains Berkeley's concentration of industrial/warehouse buildings and older residential neighborhoods bisected by Southern Pacific mainline tracks. The Interstate 80 corridor and industrial buildings separate Area #1 residential neighborhoods from the adjacent Aquatic Park and Berkeley Waterfront.

James Kenney Park is the major recreational facility in Area #1. The facility provides a new 5,400 square foot recreation center, tennis courts and playing fields.

Area #2, North Central Berkeley: This area contains moderate-income diverse residential neighborhoods. There are 3.53 acres of public recreation facilities, including Cedar/Rose Park and several small recreational facilities.

Area #3, Northside: This residential, moderate-income area contains the highest park and recreation acreage in Berkeley, 31.65 acres. It contains one major park and recreation center (Live Oak Park), two large parks (Codornices and the Hearst Strip), a special recreation facility, swim center, and small park.

Area #4, The North Hills: This area is predominantly an upper-income, low-density residential district. The area contains the second largest concentration of park acreage with 27.35 acres of parkland. Area 4 has two large parks (John Hinkel and Remillard), two small parks, eight hill parks, and one specialized recreation facility.

Area #5, Downtown: This area is the commercial center of Berkeley. In addition to the mix of office buildings, retail establishments, and civic institutions, Area 5 has a very high density, low-income residential population. There is only one park in Area 5 - Civic Center Park, 2.77 acres.

Area #6, South Central Berkeley: This area is a residential, socially-mixed low to moderate-income area. There are only 2.56 acres of recreation facilities, consisting of two small parks and a special use facility in this area.

Area #7, South Berkeley: This area is a large, high-minority, low-income residential district. It contains 16.45 acres of public recreation areas including Grove and San Pablo, major park and recreation centers, four small parks, and a senior center.

San Pablo Park, 12.95 acres, is by far the largest and most important park in the area. It provides a recreation center, court facilities and playing fields.

Area #8, Southside: This is a low-income residential area housing a large college student population. There are 3.92 acres of parkland including Willard Park and a swim center. In addition to city recreation facilities, the University of California provides extensive recreational facilities primarily for the use of students, alumni and faculty.

Area #9, The Claremont-Elmwood District: This area is primarily residential in nature, with a predominantly high mean income population. However, it is important to note that about a quarter of the residents are below the poverty line. There is almost no parkland in this area except for Monkey Island, a minor .3-acre open space.

Area #10, Aquatic Park/Marina: The two large recreational facilities at the western edge of the city are Aquatic Park and the Berkeley Marina. Both facilities are isolated from residential neighborhoods, separated by industrial/warehouse development and/or the Interstate 80 corridor.

Aquatic Park, 99.36 acres (including 66.60 acres of lagoon) is one-and-a-half miles long by an eighth of a mile wide. The existing water body supports a sailing school, windsurfing school, and waterskiing club. Additional activities include picnic areas, a parcourse and 6 km jogging run, a bird reserve, and programmed events such as concerts and other performances. Because of high noise levels from Interstate 80, poor accessibility, and deterioration of the park and water quality, there is decrease in use of this major open space.

The Berkeley Marina is described in detail in the next section on Current Recreational Facilities at the Berkeley Waterfront. Major facilities include the 975-berth marina, Horseshoe Park, Shorebird Park, and the marina mall.

CURRENT RECREATIONAL USE OF THE BERKELEY WATERFRONT AREA

The following section outlines both the existing developed recreational facilities and the unofficial recreational uses taking place currently on and adjacent to the Berkeley Waterfront site. Locations for the various uses are illustrated in Figure 3.

South Basin, Brickyard, and Marina Area. The South Basin is used heavily by windsurfers and tailgate fishermen and is sometimes used by swimmers, although the water temperature and winds make it a relatively cold and exposed environment. This area is one of the preferred launching sites for windsurfing, because of immediate access to a wide range of wind conditions. The area protected by existing land masses provides conditions for beginner to intermediate enthusiasts, and access to the open Bay offers challenges to the most experienced.

Shorebird Park is a six-acre natural area at the northwest corner of the Basin. It is used for picnicking and sunbathing and also accommodates an adventure playground. Horseshoe Park is a three-acre green space adjacent to the Berkeley Marina. It provides benches for marina viewing.

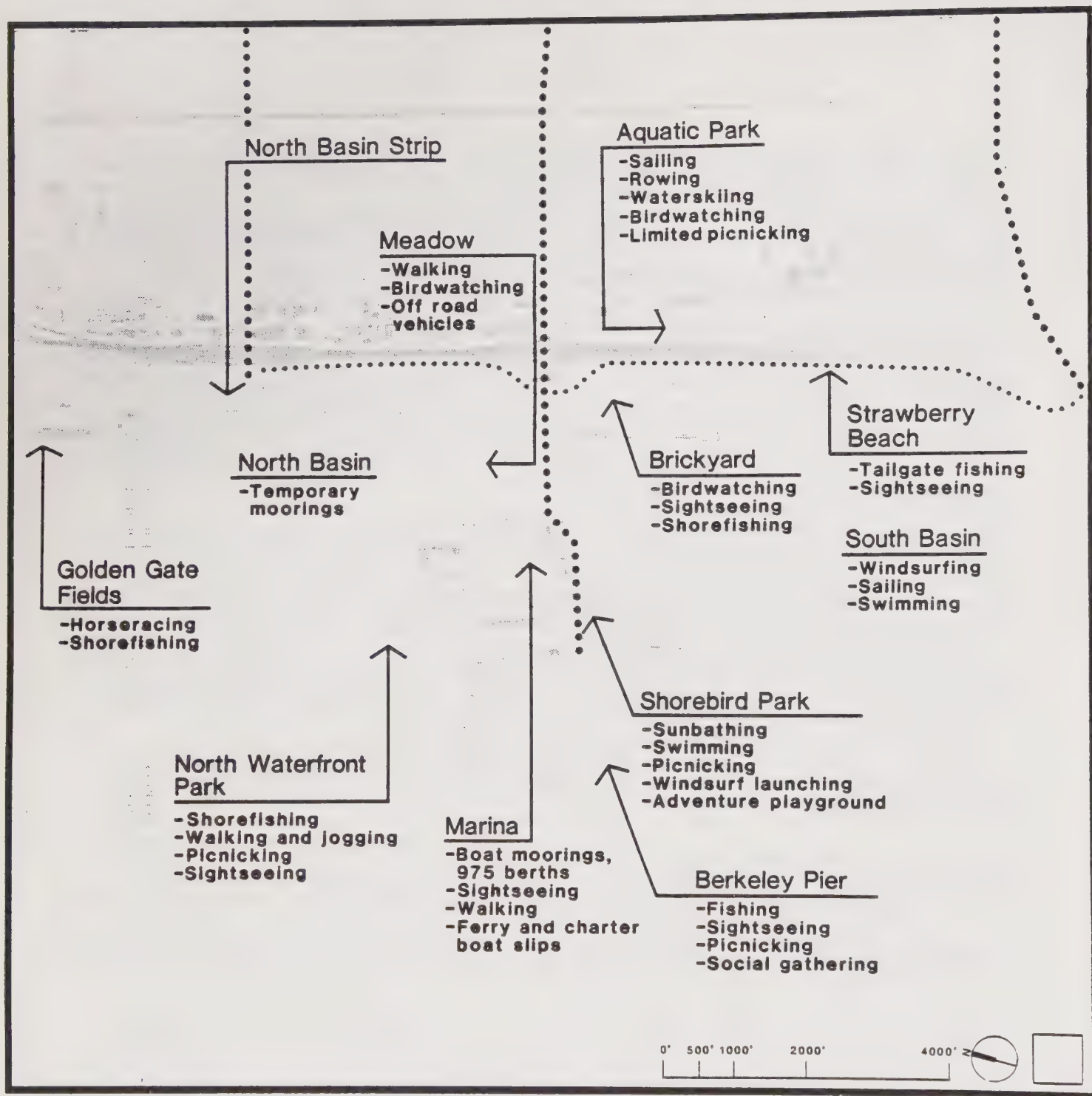
The Marina itself provides 975 small boat berths, as well as a boat launch and hoist, boat and sailboard rental, dry storage, boat repair, and Ferry/Charter Boat slips. Besides these boating-related facilities, additional recreational activities include strolling and parking for pleasure.

The 1,700-foot-long Berkeley Pier accommodates not only fishermen but strollers and sightseers.

Meadow and North Basin Area. Although this area is private property overgrown by weedy vegetation, it is currently used for such informal recreational activities as bird watching, off-road vehicles, dog walking, and kite flying.

North Waterfront Park. The nine-acre portion of North Waterfront Park that is currently developed provides grassy areas, trails, beaches, and picnic tables.

40191d/ERP



CURRENT RECREATIONAL USE

Figure VII-3

Legend

..... Major Access: Autos and Bicycles

..... Minor Access: Autos and Bicycles

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IDENTIFIABLE NEEDS AND EXISTING PROPOSALS

There are four main sources of data on the need for recreational facilities in the Berkeley area, namely the same four agencies already identified as service providers: The Department of Parks and Recreation, the Coastal Conservancy, the East Bay Regional Parks District, and the City of Berkeley. Each will be discussed below with regard to their identified standards and deficiencies for various recreational activities, and also concerning any current proposals by the agency to meet those identified needs or deficiencies.

This section will also address the recreational needs and desires that appear to be generally agreed-upon priorities as expressed in the community land use alternatives prepared early in 1984.

STATE OF CALIFORNIA DEPARTMENT OF PARKS AND RECREATION

Facility Demand Versus Supply.

The State, in a 1979 report entitled "Recreation Outlook in Planning District 4", analyzes the inventory and use of existing parks, identifies important recreational issues and problems, and recommends solutions to the identified problems. A computer-based data system known as the Parks and Recreation Information System - PARIS - is the primary information source. PARIS provides information in three categories:

The demand allocation subsystem, which estimates potential demand for outdoor activities and allocates demand to geographic units (in this case, counties). Demand considers the following factors: the number of people, their recreational participation, where they live, willingness and ability to travel, and the usability of resources for recreational activity. Potential demand is measured in participation days.

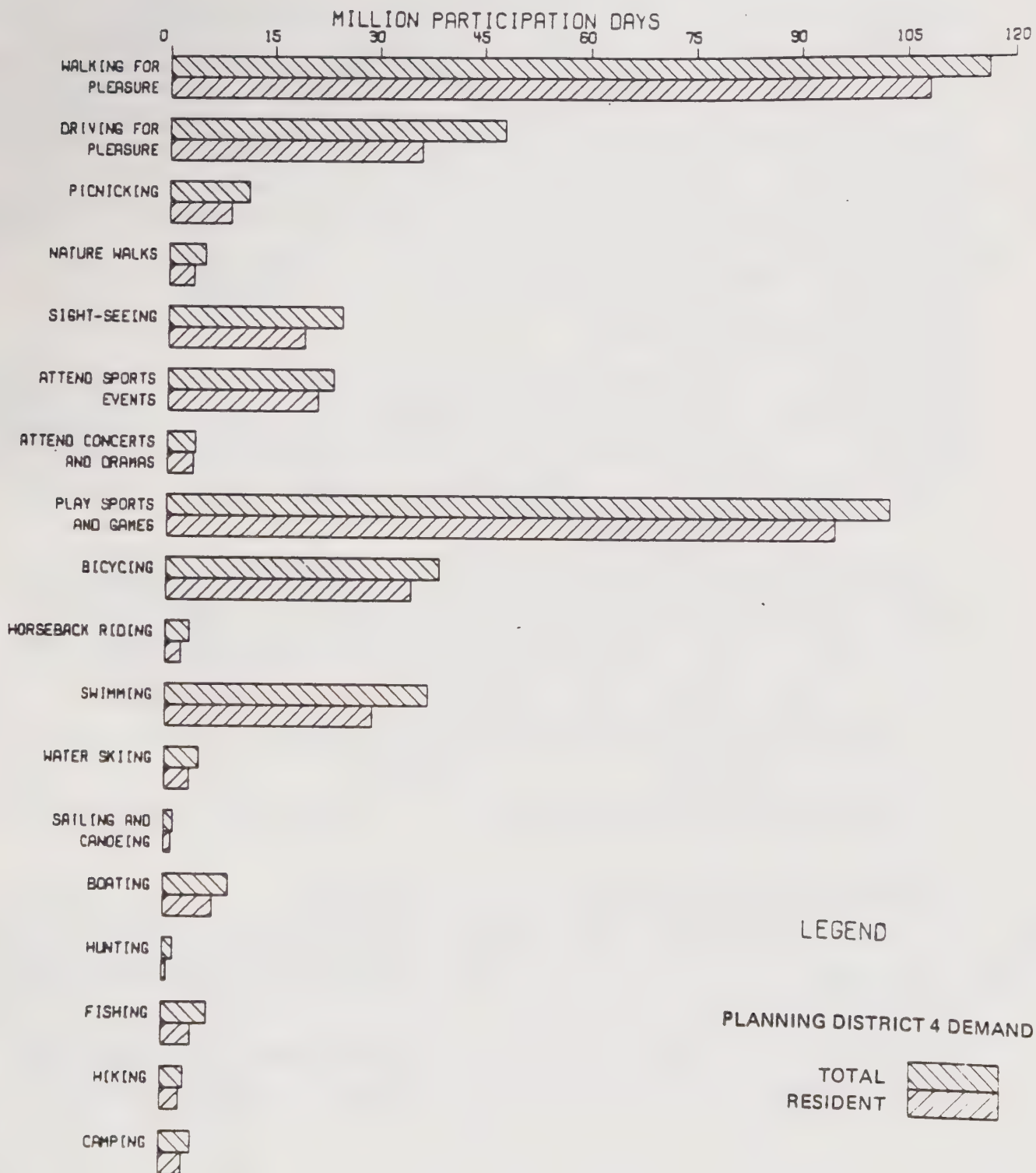
The supply subsystem, which consists of an inventory of public and private recreation areas and facilities in California.

The deficiency analysis evaluation, which compares supply with potential demand to project deficiencies.

Identified Deficiencies for Selected Recreational Uses.

Figure 4 illustrates that the most popular outdoor recreational activities are walking for pleasure (including jogging) and playing sports and games. Next in popularity are driving for pleasure, bicycling, and swimming. Trends indicate that these will continue to be the most favored recreational activities through the 1980s and 90s. (see Figure 5) Unfortunately, the PARIS analyses only focus on the the activities of primary concern to the State Department of Parks and Recreation (see Table 5). They identify four

Figure 4. DEMAND FOR OUTDOOR RECREATION ACTIVITIES
ALLOCATED TO PLANNING DISTRICT 4



Source: Recreation Outlook in Planning District 4,
State Department of Parks and Recreation, December 1979 p. 32.

MILLIONS OF PARTICIPATION DAYS

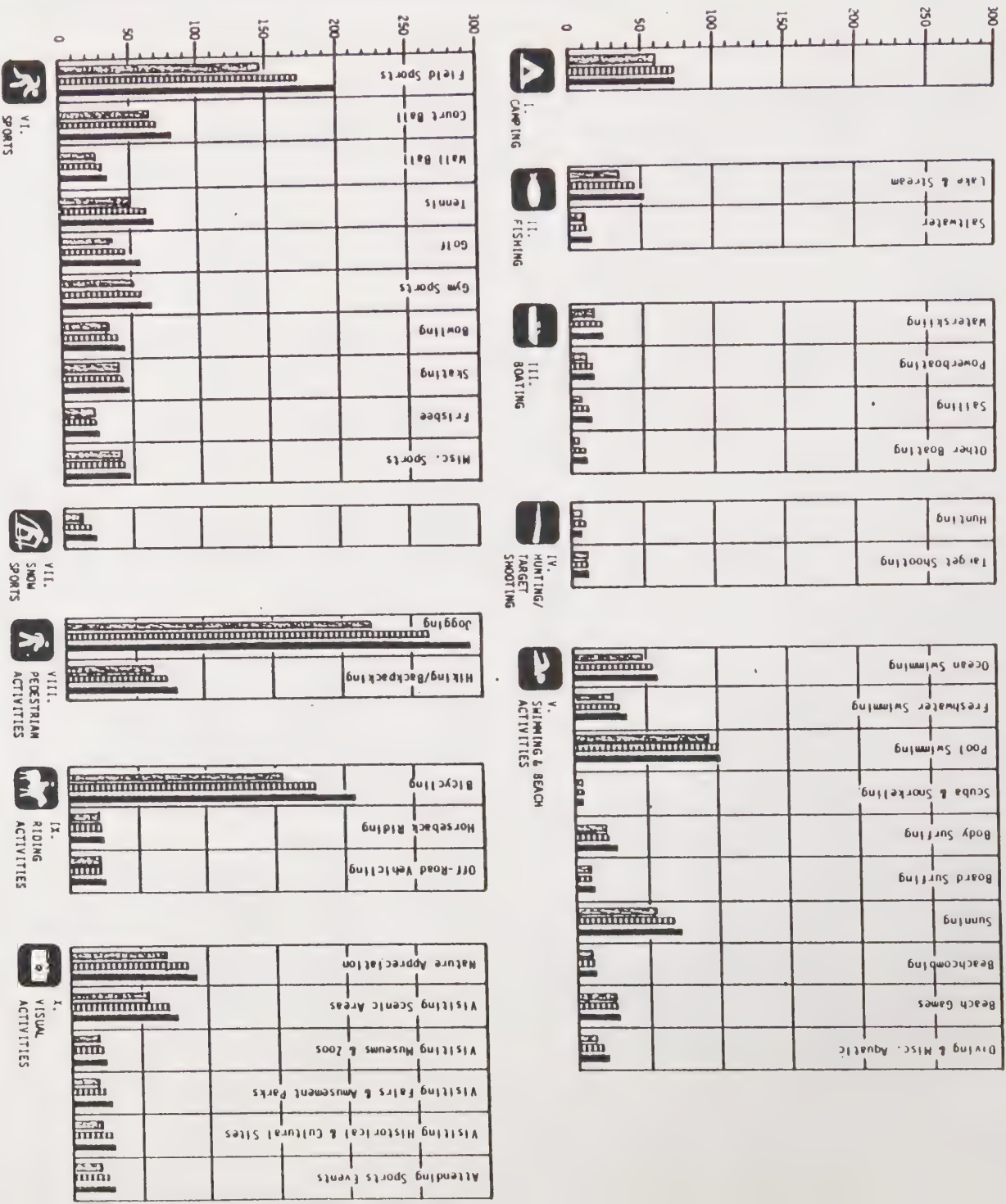


Fig. 5. Participation trends in recreation activities



Source: Recreation Needs in California, State Department of Parks and Recreation, February 1982, Revised March 1983, p. 16

TABLE 5
DEMAND FOR SELECTED RECREATION FACILITIES
IN PLANNING DISTRICT 4
1990

<u>Total Facilities Needed</u>				
<u>County</u>	<u>Camping Units</u>	<u>Picnic Tables</u>	<u>Boat Access Sites</u>	<u>Miles of Trails</u>
Alameda	2,158	3,205	3,779	560
Contra Costa	2,191	2,209	3,339	507
Marin	3,616	5,306	3,004	909
Napa	971	1,163	1,187	260
San Francisco	207	942	695	132
San Mateo	2,094	3,022	3,105	552
Santa Clara	2,341	4,292	4,759	797
Solano	1,532	1,317	2,849	375
Sonoma	<u>1,773</u>	<u>2,634</u>	<u>1,742</u>	<u>465</u>
TOTAL	16,883	24,090	24,459	4,557
<u>Existing Facilities</u>				
Alameda	199	2,033	1,659	112
Contra Costa	180	2,000	690	199
Marin	91	732	2,672	300
Napa	400	800	772	163
San Francisco	--	218	--	36
San Mateo	299	1,806	1,953	256
Santa Clara	300	5,041	642	392
Solano	155	874	790	33
Sonoma	<u>2,213</u>	<u>1,782</u>	<u>814</u>	<u>169</u>
TOTAL	3,837	15,291	9,992	1,660
<u>Additional Facilities Needed</u>				
Alameda	1,959	1,167	2,120	448
Contra Costa	2,011	209	2,649	308
Marin	3,525	4,574	332	609
Napa	571	363	415	97
San Francisco	207	724	695	96
San Mateo	1,795	1,216	1,152	296
Santa Clara	2,041	0	4,117	405
Solano	1,377	443	2,059	342
Sonoma	<u>0</u>	<u>852</u>	<u>928</u>	<u>296</u>
NET DEFICIENCY	13,046	8,799	14,467	2,897

Source: PARIS II
U.S. Forest Service RIM Tape
Recreation Outlook in Planning District 4

40191c/T5DFSRF

TABLE 6
DEMAND FOR SELECTED RECREATIONAL ACTIVITIES
IN ALAMEDA COUNTY
Local Resident Demand Only

<u>Activity</u>	<u>1980</u>	<u>2000</u>	<u>Increase</u>	<u>Percent Increase</u>
Bicycling	7,392,000	7,930,000	538,000	7.28
Hiking	3,858,000	4,555,000	697,000	18.07
Camping	3,514,000	3,913,000	399,000	11.35
Sailing	485,000	636,000	151,000	31.13
Power Boating	606,000	698,000	92,000	15.18
Misc. Swim & Beach	691,000	888,000	197,000	28.51
Nature Appreciation	4,592,000	5,226,000	634,000	13.81
Visiting Scenic Areas	3,780,000	4,058,000	278,000	7.35

Source: East Bay Shoreline Feasibility Study
State Department of Parks and Recreation

TABLE 7
CURRENT AND PROJECTED DEFICIENCIES OF SELECTED RECREATION FACILITIES
PROVIDED BY PUBLIC AGENCIES IN ALAMEDA COUNTY
Local Resident Demand Only

	<u>1980</u>	<u>Percent Deficiency</u>	<u>1990</u>	<u>Percent Deficiency</u>	<u>2000</u>	<u>Percent Deficiency</u>
Campsites (#)	70	15	100	19	120	23
Boat Access Sites (#)	130	28	180	36	230	42
Bicycle Trails (miles)	390	82	380	82	430	84
Hiking Trails (miles)	400	94	440	95	470	95

Source: See above

40191c/T6DFSRA

areas of recreational deficiency: camping units, boat access sites, bicycling and hiking trails, and picnic tables. These findings are documented in Tables 6 and 7, and summarized below.

Boating and Boat Access Sites: Demand for boating and boat launching sites has risen dramatically with an increase of 60 percent boat ownership since 1960. Compared to the population increase of 16.5 percent, this indicates a large increase in boat ownership per capita.

PARIS II Demand Projections indicate the need for 3,779 boat access sites in Alameda County by 1990, whereas the existing supply of boat access sites according to PARIS II in Alameda County is 1,659 sites.

Existing marina facilities and boat access sites within our study area are: the Berkeley Marina, with 950 berths and boat launch and ramps; the Emeryville Marina, with 200 berths and launching facilities; and Richmond Marina Bay, with berthing facilities and boat launch. In addition, the Berkeley Aquatic Park is a boat access site, serving regional sailing, wind-surfing, rowing, and water skiing groups.

The supply of boat access sites within our study area is utilized to the maximum. There is a reported shortage of between four and five thousand slips in San Francisco Bay. Berths at the Berkeley and Emeryville Marinas are filled to capacity, with two-year waiting lists.

According to the PARIS II Deficiency Analysis Evaluation for Alameda County, there will be a 2,120 boat access site deficiency by 1990. When considering only local demand, there will be a deficiency of 180 boat access sites (see Table 7).

Proposed facilities which will help alleviate the boat access deficiency are the proposed +150 berth addition to the Emeryville Marina, and development of the 1,500 berth Albany Marina. State of California Department of Parks and Recreation proposals for boat access site development within our study area are described in the Section on State Parks Plans and Proposals.

Camping: Camping has been identified in the PARIS Demand Allocation as having a potential increase of 11 percent from 1980 to the year 2000. Demand is great in and near urban areas, particularly in the summer months. Demand in Alameda County in 1990 is estimated for 2,158 camping units (see Table 5).

As discussed above, camping facilities provided by the State, are primarily located in the western portion of Planning District 4 in Sonoma, Marina and San Mateo Counties. The East Bay Regional Park District maintains several group and family campsites. The only EBRPD camping facility within our study area is at Tilden Park, and it is reserved exclusively for group use. PARIS II indicates an inventory of 199 existing camping units.

PARIS projections indicate a growing deficiency of campsites in and near urban centers within the Bay region: a deficiency of 1,959 camping units in Alameda County by 1990, and a local deficiency of 100 campsites by 1990 (Table 7).

The State Parks and Recreation Department supports the further development of camping facilities in Marin, Sonoma, Napa, and Solano Counties, and in water district lands and "ridgeland" of Contra Costa, Alameda and Santa Clara Counties, and along the coast and near urban population centers. Specific camping site proposals by the State of California for the Berkeley Waterfront are described in the Section on State Parks Plans and Proposals.

Hiking and Bicycle Trails: The demand for hiking, horseback riding, and bicycling trails has increased significantly in recent years in the Bay Area. Demand for bicycling will increase 7.3 percent between 1980 and 2000, and increase by 18 percent in the same time period for hiking. These increases are due to the area's pleasant natural environment, year-round recreational opportunities, and popularity of physical conditioning.

PARIS II Demand Allocation Evaluation recognizes the need for 560 miles of trail in Alameda County by 1990 (see Table 5), whereas there are 112 miles of existing trails provided by the East Bay Regional Park District and cities. PARIS II concludes that there will be a potential trail deficiency of 448 miles in Alameda County. Deficiency determined by local demand indicates the need for 180 miles by 1990.

The State Department of Parks and Recreation provides trails in State Park units. The Department is also assisting local governments in acquiring and developing trail projects in Planning District 4. Specific trail development proposals by the State of California for the Berkeley Waterfront are described in the Section on State Parks Plans and Proposals.

The Department of Parks and Recreation is developing a coastal hostel facilities plan in conjunction with the regional trails systems. Eight hostel locations have been recommended for Planning District 4.

Picnic Tables: PARIS II indicates the demand for 3,205 picnic tables in Alameda County by 1990. When compared with the existing inventory of 2,038 picnic tables by 1990, the forecast Picnic Table Deficiency will be 1,167 tables by 1990. The East Bay Shoreline Feasibility Study provides no information on the need for picnic tables at the project site.

Plans and Proposals.

In its East Bay Shoreline Feasibility Study, the State Department of Parks and Recreation identified the Berkeley waterfront as an area of high scenic value, offering dramatic views to the Bay, and a prime location for a major urban recreational area. The primary stated goal of the proposed plan is to reserve a substantial portion of undeveloped shoreline for public access and use. Acquisition of public and private land and wetlands is prescribed as a means to accomplish this goal, in order to insure that private development would be compatible with uses of the waterfront parkland (see Figure 6). The Meadow was identified as having the greatest development potential relative to that of other shoreline areas, and is proposed for use as a conference center, hotel, and playing fields. Although the plan recommends that the entire Meadow be in public ownership, it does allow the possibility of participation by private lessees or concessionaires in construction and/or operation of selected compatible uses. The Brickyard is proposed for acquisition for a visitor center and viewing area, and the southern 16 acres of the North Basin Strip is also targeted for acquisition, to be used for parking and dispersed day-use recreation.

STATE OF CALIFORNIA COASTAL CONSERVANCY

Standards.

Although this agency does not have any per capita and/or statistical standards per se, the Coastal Conservancy goals and objectives do imply certain standards for recreational open space and development. These standards emphasize: Access, including access to the shoreline, access along the shoreline, water access, and public transit to and from the shoreline; Preservation and Enhancement of the shoreline environment; and Recreational Access and Development of the shoreline.

Deficiencies.

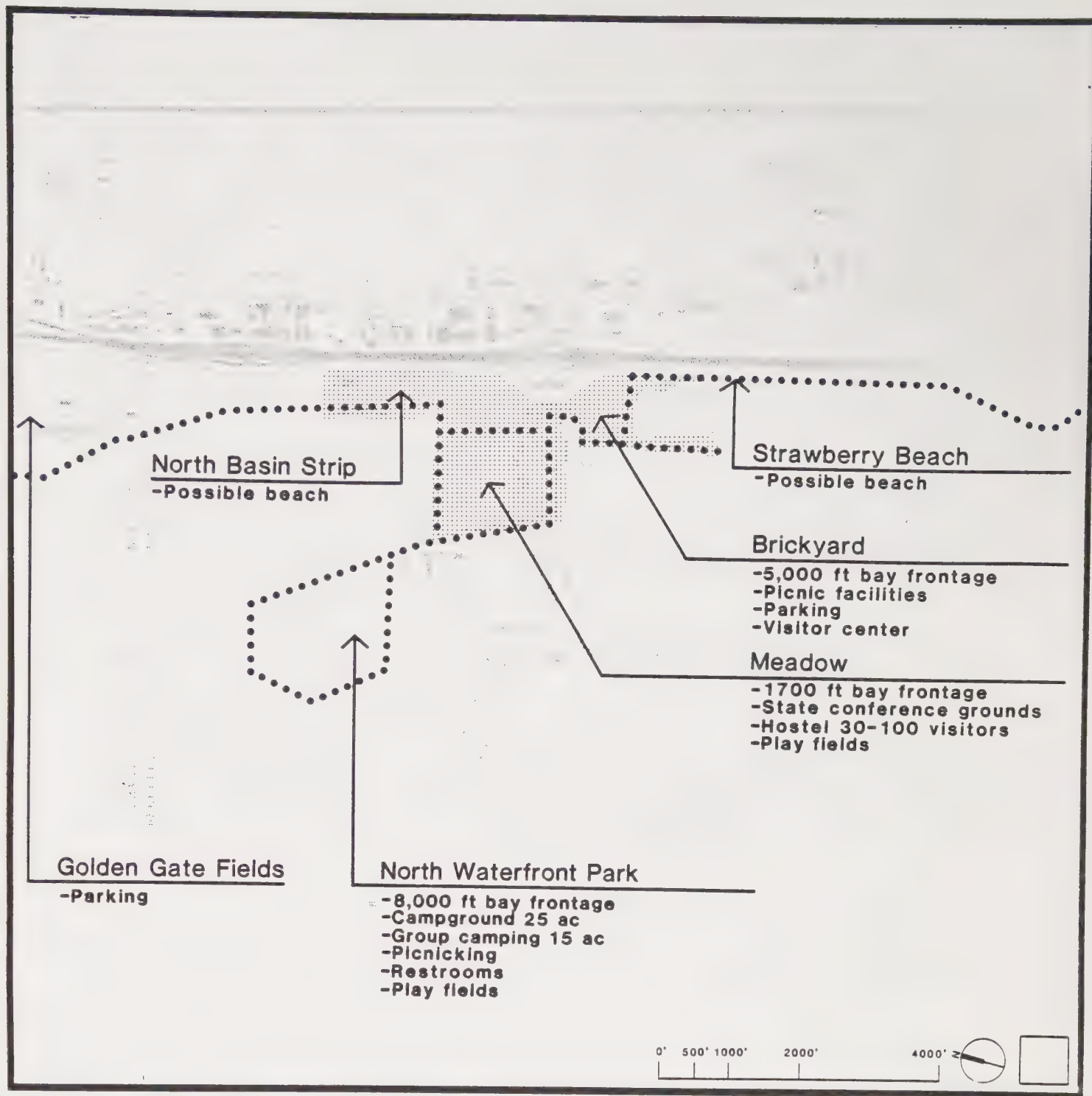
Deficiencies identified by the Coastal Conservancy in regard to the Bay shoreline are as follows:

Access.

- Limited access to the shoreline for pedestrians and bicyclists.
- No regional system of bike/jogging/walking trails along the shoreline.
- Limited access by public transit to the waterfront.

Shoreline Environments.

- Lack of protection for shoreline wildlife habitats and environmentally sensitive areas.
- Poor water quality.



STATE PARKS AND RECREATION PROPOSAL **Figure VII-6**

Legend

- [Dotted Area] Proposed for Acquisition
 [Dotted Line] Proposed Public Paths

BERKELEY WATERFRONT PLAN

ROMA

Planning and Urban Design

Anthony/Fleming Associates

Community Involvement

ESA

Environmental Assessment

DKS Associates

Transportation

McGuire and Company

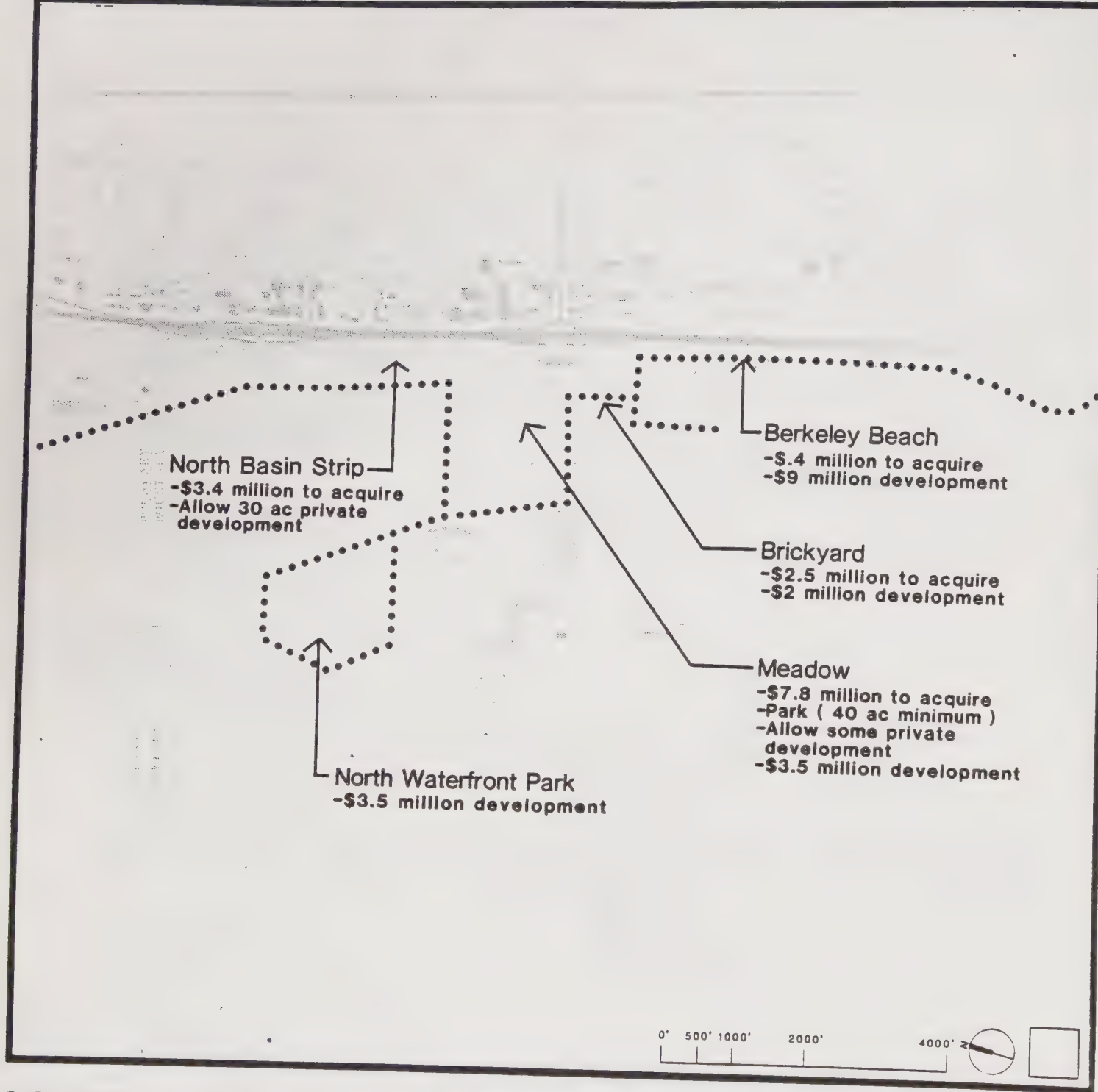
Market and Fiscal Analysis

PAD

Social Analysis

Wilson-Porter

Civil Engineering



COASTAL CONSERVANCY WORKSHOP

Figure VII-7

Legend

..... Continuous Shoreline Trail

BERKELEY WATERFRONT PLAN

ROMA Planning and Urban Design	Anthony/Fleming Associates Community Involvement	ESA Environmental Assessment	DKS Associates Transportation	McGuire and Company Market and Fiscal Analysis	PAD Social Analysis	Wilson-Porter Civil Engineering
------------------------------------------	------------------------------------------------------------	----------------------------------------	-----------------------------------------	----------------------------------------------------------	-------------------------------	-------------------------------------------

Recreational Open Space Development of the Shoreline.

- Need for a Regional Park System "shared park" including ridgeland and shoreline.
- Lack of water oriented recreational facilities including windsurfing facilities, small craft facilities, fishing piers.
- Lack of shoreline beaches.

Coastal Conservancy Workshop Plans and Proposals.

The State Coastal Conservancy was empowered in 1980 to study and recommend plans for recreational use of the California coastline. Early in 1982, the Conservancy held a series of community participation workshops to gather public opinion on where the money should be spent, and how the shoreline should be used. For the East Bay Shoreline, including the Berkeley waterfront, the workshops identified some \$4.5 million to purchase and develop land for public parks, and \$1 million to purchase and protect ecologically fragile marshlands. This compared with a cost estimate of \$25.5 million to accomplish key acquisition and development.

Of 25 projects identified (see Table 8), the workshops designated 15 high-priority projects to be summarized briefly below and in Figure 7:

Projects on Private Lands:

1. Place the maximum possible amount of Santa Fe land in permanent open space, allowing limited commercial/recreational development through lease-back or similar arrangement; use resulting funds to finance other projects. (Highest priority: the Meadows and Brickyard areas. Lowest priority: Golden Gate Fields parking lot and horse barns.)

2. Protect the remainder of private land by regulatory means.

Projects on Public Lands: Proceed immediately with master plans or grant applications for North Waterfront Park, University Avenue, and Powell Street Pedestrian/Bicycle Access, fishing piers, and boating facilities.

Projects Requiring Further Study: Investigate the feasibility and funding sources for Berkeley Beach, a continuous shoreline trail, and regional trail connections.

TABLE 8

COASTAL CONSERVANCY WORKSHOP

CANDIDATE PROJECTS FOR EAST BAY SHORELINE

SHORELINE ACCESS PROJECTS.

High Priority:

- o Powell Street in Emeryville - Separate bike and pedestrian trail under freeway.
- o University Avenue - Improvement to bike and pedestrian access including a new overpass connecting Aquatic Park with the waterfront and/or a pedestrian ramp to the existing University Avenue overpass.
- o Emeryville to Richmond Trail - Implement Richmond to Oakland shoreline trail according to 1978 East Bay Regional Parks District Shoreline Trail Plan (EBRPD now supports the Caltrans plan for a bicycle lane adjacent to the proposed shoreline frontage road. See Caltrans - Operational Improvement Project on Interstate 80 and 180 in Alameda and Contra Costa Counties.)
- o Peninsula connectors and support for bicycle/pedestrian paths connecting western edge of bay fill peninsulas in Berkeley, Albany, and Emeryville with developed residential and industrial communities to the east.
- o Berkeley Pier Renovation.
- o Boat Launches and Berths - New small boat facility in the Berkeley South Basin, associated showers, restroom, and gathering facilities for sailors, coordination with possible mixed-use development located along University Avenue. At the North Basin, the recommendation calls for small boat berthing, boat ramps, and boat rentals.
- o Fishing Piers - Pier development at the Ashby Spit and Fleming Point.

Low Priority:

- o Gilman Street - Separate pedestrian/bicycle pathways under the freeway.
- o Aquatic Park - New overpass between the park and shoreline.
- o Equestrian trail adjacent to Golden Gate Fields.
- o Public Transit - Promote public transit linking all regional recreation shoreline facilities.

RECREATIONAL OPEN SPACE DEVELOPMENT OF THE SHORELINE.

High Priority:

- o Albany Landfill - Seal Albany landfill, thereby promoting recreational development of the fill area.
- o North Waterfront Berkeley Landfill - Close the North Waterfront landfill, thereby promoting recreational development of the fill area.
- o Berkeley Beach - Create and/or restore a beach between Ashby Avenue and University Avenue.
- o Murphy/Santa Fe Property (The Meadow) - Create a mixed-use and park development on the meadow site with a minimum of 40 acres to be developed as park and 15 acres of mixed-use private development near the frontage road and University Avenue.
- o Aquatic Park Improvements - Upgrade the existing Aquatic Park, improving access to the shoreline.

Low Priority:

- o North Basin Strip.

SHORELINE ENVIRONMENT PROJECTS.

High Priority:

- o Emeryville Crescent - Create wildlife preserve with limited public access.
- o Albany Mudflats - Create a wildlife preserve with limited public access.

Low Priority:

- o Hoffman Marsh - Create a wildlife preserve. Low priority status due to environmental stability, absence of threat, and remoteness.
- o Aquatic Park Bird Sanctuary - Restoration and preservation of the wildlife sanctuary.

EAST BAY REGIONAL PARKS DISTRICT

Facility Needs and User Preferences

The EBRPD published a Need and Demand Survey in January, 1976--the so-called Tyler Report. Its main purpose was to assess user attitudes toward existing facilities; thus it does not really provide guidance on potential acquisition or development additions to the system. However, there are a number of findings of this report which may shed some light on potential open space and recreation facilities at the study site.

First, the Tyler Report documents visitors opinions on the importance of various aspects of the park experience. Most often rated as "very important" were the following:

- Protection against crime in the park (91%)
- Enforcement of park rules and regulations (83%)
- Availability of information about park facilities (73%)
- Opportunity to do something physically active (60%)
- Opportunity to get away from people (59%)
- Free admission and parking (58%)
- The chance to do nothing (55%)

Opinions on the most popular activities which a park might offer were as follows:

- Picnicking (96%)
- Loafing/relaxing on the lawn (92%)
- Sightseeing (91%)
- Barbecuing (85%)
- Nature Center (83%)
- Hiking (83%)
- Swimming (78%)
- Playing outdoor sports, e.g. softball, football, soccer, etc. (75%)
- Fishing (70%)

The report documents the fact that 80-90% of EBRPD park visitors arrive by car. The next most popular modes of transportation, in order of frequency, were bicycle, motorcycle and foot. Only 1% or fewer respondents arrived by public transit. The majority of park visitors were in groups of 2-4 people

(61%). Only 21% were visiting the park by themselves. Typically, visitor groups include at least 2 adults. The most frequently mentioned age categories for companions of park visitors were:

- Other adults (76%)
- Children 6-10 (19%)
- Children 11-17 (18%)
- Children 2-5 (17%)
- Infants under 2 (8%)

The report found high levels of satisfaction with the EBRPD parks and what they have to offer. Suggestions for improvements are all at low levels; the highest level of interest was in expanding existing facilities and providing additional new facilities.

Recognized Deficiencies

The best source of information of EBRPD assessment of recreational needs compared with supply of facilities is their 1980 Master Plan. We have already mentioned their overall goal of a Balanced Parklands Plan for equitable distribution of regional parklands on the basis of population distribution. The EBRPD's Master Plan describes a combination of existing and proposed facilities that meets that goal.

Proposals and Guidelines

Several of the proposed facilities relate directly to the Berkeley Waterfront site. First, the EBRPD Master Plan proposes a new "regional shoreline" in Albany, Berkeley and Emeryville. It also proposes a "regional trail" from the Emeryville Crescent all the way to the existing George Miller Jr. Park in Richmond. Suggested EBRPD planning and management guidelines for these categories of facilities can be summarized as follows:

Regional Shoreline

1. Conserve significant resource values, while providing shoreline-related recreation.
2. Provide maximum public access to the shoreline, while preserving and restoring near natural shoreline environments.
3. Include a natural area and a recreation unit where possible, e.g., beach, picnic area, shoreline meadow or turf area, shoreline and pier fishing areas, marinas, boat landings, visitors centers, outdoor educational or interpretive facilities, viewpoints and related concessions.

4. Locate staging facilities at least 100 ft. upland from the shoreline.
5. Maximize access alternatives to the private automobile.

Regional Trail

1. Clearly designate each Trail link with signage.
2. Consolidate different modes (hiking, bicycling and jogging) within the same corridor where possible.
3. Establish minimum width sufficient to accommodate the anticipated user types and volumes.
4. Prohibit motorized vehicles.
5. Locate staging areas (e.g. parking, toilets, picnic area, shelters) at strategic points along trail link, preferably within other recreational facilities.
6. Include additional facilities such as playing fields, fishing areas, or landscaped areas wherever possible.
7. Provide rest areas between staging facilities at appropriate points.

Although the EBRPD does not propose a Regional Recreation Area for the study site, there is the potential for one. Considering that the ultimate size of the North Waterfront Park along is 90 acres, it would be possible to aggregate 100 or more acres as required by EBRPD standards for such a facility. Open space and recreation on site could also fulfill the remainder of the planning and management guidelines for a Regional Recreation Area: capability of withstanding intensive public use, potential for an outdoor educational/interpretive program or facility, and suitability for both conservation or natural areas and extensive active recreational improvements.

CITY OF BERKELEY

Facility Standards

Comparison of Inventory to Adopted Standard. The City's 1977 Master Plan identifies a general open space goal of 2 acres per 1000 residents, excluding school playgrounds. At the current population of approximately 106,000, this standard yields a need for 212 acres of city-owned and operated parks and recreation space. Population is relatively stable so the above acreage is a good target goal or the purposes of this study.

The current city parks inventory is somewhat ambiguous. As already described, there are 140 acres plus the 70-acre lagoon in Aquatic Park. Thus, if the lagoon is included, the city satisfies its standard; without the lagoon, there is a deficiency of 72 acres.

Local parks not included in the tabular inventory but located on the Local-Serving Facilities Map (Figure 2) are Peoples Park, administered by the University of California, and the Peoples Park Annex, administered by the Bay Area Rapid Transit District. These total an additional 3.3 acres.

Alternatives to City of Berkeley Standard. The California State Outdoor Recreation Plan recommends that a city should provide a total of ten acres of park and recreation area (exclusive of school playgrounds) for each 1,000 residents. Berkeley would have to acquire approximately 900 additional acres to meet this standard. Clearly, the state standard of 10 acres of park and recreation per 1,000 is too high for an urban center such as Berkeley. Such a standard is more appropriate in less dense areas which can obtain vacant lands more readily. The following is the most recent information from the State comparing Berkeley's park inventory to that of other East Bay cities. It indicates that a standard of from two to six acres per thousand is a realistic goal for Berkeley.

<u>City</u>	<u>Pop. (1970)</u>	<u>Nbhd. Parks</u>	<u>Comm. Parks</u>	<u>Other Parks</u>	<u>Regional Parks</u>	<u>Total Acres</u>	<u>Acres/ 1,000</u>
Berkeley	116,716	51.1	29.6	7.6	99.0	187.3	1.61
Richmond	79,043	47.9	61.6	2.5	17.5	129.5	1.64
Piedmont	10,917	24.0	0.0	0.0	0.0	24.0	2.20
Kensington	5,823	6.0	0.0	0.0	0.0	6.0	1.03
Hayward	187,376	146.0	67.1	158.8	257.0	628.9	3.36
Alameda	70,968	13.9	41.0	353.5	0.0	408.4	5.76
Albany	14,674	21.5	11.0	0.0	55.0	87.5	5.96
Oakland	361,561	117.7	155.7	478.5	1,351.00	2,102.9	5.84
Fremont	99,665	103.4	92.7	5.5	466.8	668.4	6.71

Deficiency by Use Category

Interviews with City staff have identified four types of recreational facilities most needed by residents: playing fields, tennis courts, swimming pools, and a large outdoor amphitheater or assembly space for city-wide gatherings.

Deficiency by Geographical Area

In order to assess which neighborhoods have the greatest need for additional open space and recreational facilities, the city uses 5 equally-weighted need indicators as follows:

- Youth population as a per cent of the total
- Residential density
- Number of juvenile offenders
- Per cent of families below poverty level
- Acres of city open space per 1,000 residents

According to these factors, the neighborhood having the greatest need for parks is Area 7, South Berkeley. Next are Area 8, Southside, and Area 1, West Berkeley. Third in need is Area 6, South Central Berkeley. As would be expected, the areas having the least need for additional parks are in the northeast hills of the city.

Recent and Proposed New Facilities

The City is in the process of developing the North Waterfront Park, as discussed in the Land Use section. Phase I (9 acres) is already in operation, and was included in the existing parks inventory. Phases II and III (30 additional acres) have partial funding - enough to pay for basic improvements similar to those completed for Phase I, i.e. irrigation, planting of grass, and basic pathways. These improvements will occur within one to two years. The remaining 50 acres or so would be improved as funding is secured.

The 1977 Master Plan mentioned a number of other potential open space opportunities: The Hearst Strip, the grounds of the School for the Deaf and Blind, Claremont Canyon, acquisition and park development of the Old Santa Fe Railroad right of way, and relocation of the city's Corporation Yard to make room for a new park. Action has already been taken on the first four: The Hearst Strip is now the city's Ohlone Park, Claremont Canyon and the grounds of the school for the Deaf and Blind are listed as Open Space Preserve by the East Bay Regional Parks District, and the Santa Fe right of way has been acquired by the city.

Current City Priorities

Both in the Master Plan and in recent interviews with the city, highest priority is given to improvement of existing facilities rather than new acquisition and development. Considering the increasingly limited funds available to the City, it is understandable that they address maintenance, rehabilitation and other operations costs before expansion of the system.

As to the policies for open space, recreation and conservation on the waterfront site itself, they are contained in the Preliminary Goals and Objectives for the Waterfront (January 1984), which are now being developed into specific Evaluation Criteria by the consultant team.

In addition to the above, the Parks and Recreation Commission recommended two specific proposals for the site. First, they request that an "active recreational sports complex of no less than 25 acres" be included, and that it be of a design and lighting plan which allows simultaneous soccer, softball and hardball games. Secondly, they recommend that the opening of Strawberry Creek, and any other stream outlets into the Bay, "be enhanced and made a focal point in any plan that is developed."

Other suggestions by the Parks and Recreation Commission are summarized below

- Varied activities, from structured to solitary and passive.
- Separate paths for walking, jogging, bicycling and skating, analogous to those at Venice Beach.
- Wind-protected sun traps for sunning, reading and picnics.
- Facilities for nighttime entertainment, such as music, dancing, theater, eating and drinking.
- Amphitheater for amplified music, to relieve John Hinkel Park and Greek Theater.
- Expansion of Shorebird Adventure Playground.
- Expansion of Marina and Nature Study areas.
- Inclusion of money making recreation.
- Recreation-related jobs for unskilled and partially skilled people.
- Incorporation of access for, and participation by, the handicapped.
- An appropriate amount of simple, low-cost restaurants and food stands.
- Maximum water sport facilities.
- As many diverse recreational, cultural and educational facilities as possible, such as museums, natural and cultural centers.
- Potential Tivoli-like pleasure park.

COMMUNITY LAND USE PROPOSALS

The community land use alternatives for the waterfront which were submitted in the spring of 1984 are not adopted city policy. However, they do provide clues to some of the generally-agreed recreational needs and priorities relevant to planning for the site. They also are a source of specific images and ideas that could contribute to a rich design solution reflecting Berkeley's special and varied character.

The objectives which consistently recurred in community alternatives are now being incorporated into the Evaluation Criteria for the site by the Consultant team. For example, virtually all community proposals agreed that the plan for the site should provide maximum opportunities for water-related recreation and open space. The following specific activities received a clear consensus of support:

- Fishing pier or jetty.
- Tailgate fishing.
- Waterfront boardwalk or promenade.
- Shoreline bicycle/pedestrian trails.
- Windsurfing basin and rental.
- Beach south of University Avenue.
- Temporary small-boat moorings.

Other water-related recreational activities mentioned were a commercial marina and a nude beach.

In addition to water-related recreation, there was a general agreement that the site should provide a wide range of other appropriate recreational/educational cultural activities. Uses most frequently mentioned were a nature preserve/study area at Brickyard Cove, large meadows for kite flying, picnicking, games, and community gatherings, and an outdoor amphitheater. Other recurring suggestions were large playing fields, a public conference center, and a museum or cultural center. Each of the following uses received 1-3 mentions:

- Exhibition center (for arts and crafts, etc.).
- Indoor theater or arena.
- Indoor sports center.
- Health club.
- Swimming pool.
- Large pond.
- Aquarium.
- Large "wild" area.
- Specialty produce gardens or greenhouse.
- Community gardens.
- Golf Course.
- Horseback riding.

Almost without exception, the community alternatives maintained a large portion of the site as public open space. Over 3/4 reserved the majority of privately-held waterfront lands for open space/recreational purposes. This includes the proposal for the landowner, Santa Fe Land Improvement Company.

40191e/INAEP-EBRPD

FUNDING OF OPEN SPACE/RECREATION/CONSERVATION

One of the major issues to be faced in evaluating the feasibility and desirability of alternative land use options for the site is the funding of open space improvements. In order to allow intelligent choices between open space alternatives, it is necessary to know their cost and phasing implications, both in terms of capital improvements and operations/maintenance. This memo documents initial findings on available funding sources and how they apply to specific potential improvements on the Berkeley waterfront.

FEDERAL SOURCES

As is clear from the summary chart of funding sources (attached Table 9), no long-term commitments can be expected from federal programs. Sources such as the Land and Water Conservation Fund, generously funded in the 1970's, are substantially reduced. Others, such as the Urban Parks and Recreation Recovery Act (UPARR) and the Economic Development Administration (EDA), have been virtually eliminated. Open space improvements are eligible projects for Community Development Block Grants and Urban Development Action Grants, but they must compete with the whole host of other City priorities. Lastly, the Army Corps of Engineers is a potential funding source for bay dredging, such as in the sailing basins.

STATE SOURCES

In past decades, state parks and recreation bond acts were a major source of capital outlay funds, but the funds from the 1964, 1974, and 1976 bonds have either been spent or are committed. Even out of 1980 bond funds no grant money but only loan money remains. The most recent state funding sources are the 1984 Propositions 18 and 19. The former, and much larger, funding is summarized in the table on the following page. Portions of this proposition relevant to Berkeley will be discussed below.

Local Parks Funds

Only two segments of the five listed under the Local Parks category are potentially relevant to Berkeley waterfront improvements. The Roberti Z'berg Program Act only yields approximately \$50,000 for Berkeley for each of the years 1984 and 1985. For 1986 and 1987, the Roberti Z'berg funding may increase, but only by about 30 percent. An additional pot of money is allocated competitively by regions; Berkeley's eight-county district will probably receive about \$6,000,000 per year. In any one year, a maximum of \$2,000,000 could be allocated to any one regional park. In order to receive any of these funds, a Berkeley waterfront project would have to be sponsored by either the City or the East Bay Regional Parks District.

The last three funds listed under Local Parks probably do not apply to Berkeley waterfront open space improvements.

Proposition 18 will provide funding in these major categories:



Local Parks \$150,000,000

Development, rehabilitation, restoration of real property for park purposes (competitive by regions)	\$78,500,000
Roberti Z'berg Program Act	\$45,000,000
Development, rehabilitation, restoration of real property for locally and regionally operated lakes, reservoirs, and waterways (competitive statewide)	\$15,000,000
History preservation: Development and acquisition of historic preservation projects, including cost of planning and interpretation	\$10,000,000
Non profit organizations	\$1,500,000



State Park System \$145,000,000

Acquisition of necessary land	\$45,000,000
Development: South Coast	\$28,500,000
Inland	\$15,000,000
Lakes, reservoirs	\$15,000,000
San Francisco Bay	\$14,500,000
Central Coast	\$ 7,500,000
North Coast	\$ 4,500,000
Delta	\$ 2,000,000
Total development	\$87,000,000
Storm damage repair	\$ 5,000,000
Increased stewardship	\$ 5,000,000
Volunteer projects	\$ 3,000,000



Coastal Resources \$ 50,000,000

Grants to carry out coastal LCPs	\$20,000,000
Coastal Conservancy Act	\$15,000,000
Grants to San Francisco Bay and Suisun Marsh	\$15,000,000



Wildlife Conservation \$ 25,000,000

Acquisition, development, restoration of property for wildlife management	\$15,000,000
Acquisition, restoration of habitat for rare and endangered species under Endangered Species Act	\$10,000,000

Proposition 18 will be financed by the sale of general obligation bonds. The state Department of Finance estimates the total cost of the bond issue at \$750 million to \$760 million, over a 20-year period. This amounts to about \$1.50 per California citizen each year.

For more information, write or call
California Department of Parks and Recreation Information Office or Grants Administration Office
P.O. Box 2390 Sacramento, CA 95811 (916) 445-4624 (916) 445-0835

State Parks Funds

In order to be eligible for any of the approximately \$150 million allocated to the State Park System over the next few years, the East Bay Shoreline Park would have to be considered an "existing project", even though only the 1932 Feasibility Study has been completed. If it is deemed an existing state park project, there are \$45 million potential funds (statewide) for acquisition of necessary land, and \$14.5 million (Bay region) for development.

The East Bay Shoreline Park is specifically mentioned in the 1982, 1983, and 1984 Budget Acts. However, there are two contingencies placed on allocation of the funds:

1. Plans for development will not be approved by the State Public Works Board before delivery of agreements between the Department of Parks and Recreation and the adjacent cities (Albany and Berkeley) providing the necessary state interest, leasehold, or both.
2. The State will not assume operations or maintenance until there is an integrated shoreline park through both Albany and Berkeley.

Coastal Resources Funds

Approximately \$50 million in funds under this category is administered by the State Coastal Conservancy. Approximately half is allocated to projects under the Coastal Conservancy Act, and half is tied to projects on San Francisco Bay and Suisun Marsh. See table for further description of eligible projects and priorities.

Wildlife Conservation Funds

Approximately \$15 million in funds is allocated statewide for acquisition, development and restoration of property for wildlife management. On the Berkeley site, this might apply to proposals to enhance the Brickyard for a nature preserve, and to acquire some of the adjacent wetland areas now privately held.

An additional source of wildlife habitat funds is Proposition 19, the 1984 Wildlife Enhancement Bond.

PRIVATE SOURCES

Property Owner

Perhaps the most logical source of private aid for Berkeley waterfront conservation, recreation, and open space is the property owner, Santa Fe Land Improvement Company. Their official proposal to the City calls for permanent dedication of approximately 80 acres of public open space. In addition, the

plan provides for open space easements on the Central Meadow, the interior of the Brickyard, and the southern shore of the North Basin. The landowner's proposal implies that the above dedications would be at no cost; however, some other agency would have to construct, operate, and maintain the areas. The open space easements, on the other hand, would be constructed and maintained by Santa Fe. The landowner also proposes to construct (as part of overall infrastructure improvements) the scenic drive, but not the non-vehicular trail system, except in the "open space easement" areas mentioned above.

Further progress in the City's own proposed plans will hopefully produce a mutually satisfactory agreement on conservation, open space and recreational land dedication, improvements, and/or fees that preserve the environmental values of the site, enhance the public interest, and mitigate the effects of development.

Beyond the regulatory concessions by the developer, the City and other public agencies will have to negotiate with the landowner any further desired land acquisition.

Other Potential Private Funding

There are a number of organizations and foundations which offer grants and loans which may be relevant to the Berkeley waterfront open space and recreational facilities. Some may also be willing to assume certain responsibilities of operations or maintenance, or to be the sponsors of funding applications to other sources. Such private entities include the Sierra Club, Nature Conservancy, Audubon Society, Trust for Public Land, and a host of private foundations. These sources will probably be relatively minor components in the perspective of total project funding, however.

40191c/F00SRC

Table 9.
FUNDING OF
RECREATION/OPEN SPACE/CONSERVATION

AGENCY OR AUTHORIZING LEGISLATION	ELIGIBLE PROJECTS	BASIC SELECTION CRITERIA	PRIORITIES	HOW IT APPLIES TO BERKELEY
FEDERAL				
o Urban Parks and Recreation Recovery Act	o Hasn't been funded in 3 yrs.; not in current budget	-----	-----	-----
o Land and Water Conservation Fund	o Acquisition, outdoor rec., interpretive cntr., restrooms, etc.	o 50% matching; only 1 million competitive statewide per year	o Evidence of need; deficiency; no. users, pop. density, income level	o Contributing to N. Waterfront Park; could fund other, but very limited \$ avail.
o Community Development Block Grants	o City improvements or programs	o Standard per capita allocation	o Determined by City	o Would have to compete against all other city projects
o Urban Development Action Grants	o Can't use for pub. facil./services	o "Seed money" and "gap financing" for public/private ventures	o Employment and revenue generation	o Marina Plaza, conf. cntr., other potential public/private
o Nat. Coastal Energy Impact Programs	o Hasn't been funded for 3 yrs.	-----	-----	-----
o Economic Development Administration	o Hasn't been funded	-----	-----	-----
o Army Corps of Engineers	o Bay dredging	o Competitive Grants, Maximum 50%	-----	o Possible dredging of N. Basin

Table 9. continued
FUNDING OF
RECREATION/OPEN SPACE/CONSERVATION

AGENCY OR AUTHORIZING LEGISLATION	ELIGIBLE PROJECTS	BASIC SELECTION CRITERIA	PRIORITIES	HOW IT APPLIES TO BERKELEY
STATE				
o East Bay Shoreline Park (1984 Budget Act)	o State portion of Berkeley waterfront project	o Targeted to Berkeley, Albany, Emeryville shoreline and water- related recreation/ open space	o Trail connecting through Berkeley and Albany o Revenue generators to subsidize acquisition	o Requires continuous trail before state will approve plans or release monies
VII-44 o Roberti Z'Berg Urban Open Space and Rec. Program Act, 22.5 million/yr. each for 1984 and 1985	o Acquisition o Development or Rehab. o Operations/Maintenance	o 3 components: -80% to urban jurisdictions (Berkeley got \$52,000 in 84-85 fiscal yr.; 75/25 local matching) -Competition, urban need basis -Competition, non-urban need	o "Greatest need by greatest number": -85% distr. per capita -15% to non-urban -2% urban jurisdictions compete for remainder	o Berkeley gets \$50,000/yr. now; could get slightly more from competitive allocation
o Environ. License Plate Program	o Rec./environmental projects	o 3-1/2 to 4 million/yr.	o Political backing	o Shore improvements, other rec./environ.
o 1975 and 1980 Bond Act (California Parklands Acts)	o Acquisition or development (deadline is preceding fall for the next fiscal yr.)	o Need, deficiency, capability to complete project in a timely manner	o Mainly loans, not grants	o City or East Bay Reg. Parks District could apply

Tab;e 9. continued
FUNDING OF
RECREATION/OPEN SPACE/CONSERVATION

AGENCY OR AUTHORIZING LEGISLATION	ELIGIBLE PROJECTS	BASIC SELECTION CRITERIA	PRIORITIES	HOW IT APPLIES TO BERKELEY
o Coastal Conservancy Access Grants	o S.F. Bay and Suisun Marsh: -accessways on pub. lands -access portions of CC Urban Waterfront projects -year 1 operating costs for accessways funded under this program	o Must be govt. or local nonprofit o Greater than local need o Consistent w/pub. access design standards o Unavailability of other funding o Increases access to Bay o Utilizes CCC to implement o CEQA compliance o BCDC conformance	o Urgency o Innovation o Cost effectiveness o Complete within 1 yr. of funding o Local interest, demonstrated by matching funds or maintenance	o Now contributing to N. Waterfront Park; could apply to many other aspects of Berkeley project
o Coastal Conservancy Urban Waterfront Program	o Larger public access and visitor service	-----	o Refundable grants	o 6 million available competitive entire S.F. Bay
o Coastal Conservancy Urban Waterfront Revenue Bonds	o Urban waterfront projects w/dedicated revenues to secure the state-sponsored bonds	-----	-----	o \$650 million total bonding capability
o Tidelands Oil Moneys	o State legislature priorities	o Direct appropriation	o Political backing	-----
o State Department of Boating and Waterways	o Launching ramps, marinas, small boat harbors	o No land acquisition o City must maintain for 20 years o \$25-500,000 loans or grants	o Demonstrated need	o N. Basin ramp, transient mooring, possibly marina

Table 9. continued
FUNDING OF
RECREATION/OPEN SPACE/CONSERVATION

AGENCY OR AUTHORIZING LEGISLATION	ELIGIBLE PROJECTS	BASIC SELECTION CRITERIA	PRIORITIES	HOW IT APPLIES TO BERKELEY
o State Department of Navigation and Ocean Development	o Marina	o Loan to City, possibly repaid by revenues from fees or concessions	o Design and economic viability	o N. Basin marina and or transient mooring
o Wildlife Conservation Board (part of Fish and Game)	o Waterfront access	o Govt. or pub. agencies eligible, Pier improvements now being funded	o Improvement for fishing or hunting purposes o Acquisition for habitat	o Brickyard habitat; fishing access improvements
PRIVATE GROUPS				
o Santa Fe (property owner)				
o Sierra Club				
o Nature Conservancy				
o Audubon Society				
o Trust for Public Land				
o Foundations				
S.F. Foundation				

RECREATIONAL ANALYSIS SOURCES

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VIII. Demographics and Housing

PLANNING ANALYSIS & DEVELOPMENT

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VIII. BERKELEY WATERFRONT PLAN

DEMOGRAPHIC & HOUSING SETTING

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January 18, 1985

IV. DEMOGRAPHIC & HOUSING SETTING

A. HOUSING DEMOGRAPHICS

The City of Berkeley has a population of 103,328 with 44,704 households according to the 1980 Census. /1/ Forty-four percent of the households (19,239) are families accounting for more than 54,000 persons. As in many other cities, Berkeley's population has been declining since 1960. There has been a decline of 13,388 (12%) since 1970, or 1300 people annually. There has been a drop of 951 (2%) in the number of households as well. /2/ Average household size was 2.1 in 1980, down from 2.3 in 1970. Since the University of California enrollment accounts for 20% of Berkeley's residents, a high proportion of Berkeley residents (9%) live in group quarters compared to the region as a whole (2%). The racial composition of the city is 66% white, 20% black, 10% Asian and Pacific Islander, and 5% Spanish origin.

Income figures reported in the 1980 Census indicate that the median household income was \$13,506 compared to \$20,018 from the region as a whole. For families, the figures are \$20,360 in Berkeley and \$24,649 for the region as a whole. Median income in Berkeley has increased slightly less than the rate of inflation between the 1970 and 1980 Censuses. /3/

Income distribution in Berkeley indicates that 20% of the households (8,940) had incomes below \$5000 and 39% (17,434) below \$10,000 in 1980. The large number of students accounts for part of the low household income figures. About one-third of Berkeley households reported income of \$20,000 or more. Family income is substantially higher than household income, with only 10% at the \$5000 level and 24% at the \$10,000 level. Although there has been a decline in the overall amount of families in Berkeley between 1970 and 1980, there has been a 10% increase in the number of very low income black families. Associated with this is an increase in Berkeley's elderly black population which increased from 1,906 to 2,895 persons (52%) between 1970 and 1980.

The disabled population was estimated at approximately 3,200 in 1980, or 3.5% of the population, about the same as the region as a whole. A little more than half this population is over 65 years of age.

There are 46,334 dwelling units in the city, and a 3.5% vacancy rate reported in the 1980 Census. Of the 44,704 occupied units, 62% are renter-occupied and 38% are owner-occupied. Although Census data on the Berkeley housing stock is inconclusive, /4/ it appears that there may have been an increase of 1000 owner-occupied dwelling units between 1970-1980 but a decline of 2000 units in the rental stock. /5/ If the overall number of dwellings declined

in the period, rental housing was probably being converted to owner occupancy.

Housing costs in Berkeley are low compared to the rest of Alameda County although the costs of home ownership are higher than in the region as a whole. /6/ Median contract rent was \$226 per monthly for the city and \$249 for the county. The mean value for an owner-occupied unit was \$110,750 for the city and \$94,210 for the county. /7/ According to the city's Housing Element, 10% of the renters pay "very low" rent and another 35% pay "low rent." For home owners, 15% pay "very low" housing costs while another 26% pay "low" cost. As these costs are related to median income, they indicate that there is an imbalance between income distribution and shelter costs in Berkeley. That is, there are more households that can only afford "very low" and "low" rents than there is housing that has "very low" or "low" cost. For example, 40% of Berkeley's families are in the "very low" income category, but only 10% of the renters and 15% of the home owners have "very low" housing costs.

There are 13,079 households that pay 35% or more of their income for housing. The vast majority of these (11,200) are renter households. At the other end of the spectrum, there are 7,863 renter households and 9,244 owner households that pay 20% or less of their income for housing.

The University population has a major effect on Berkeley's housing stock, as UC provides only 8,894 dwelling units for an enrollment of 29,848 students. About two-thirds of the students live in Berkeley, while the private market provides housing for 11,400 single students and 1,000 students with families in the city. /8/

The physical condition of housing is generally good in Berkeley, although about 53% (24,335 units) of the housing stock was built prior to 1949. There are overcrowded units and units with substandard plumbing that may number as high as 2000, according to the Housing Element. /9/ Another 16,835 units are in need of rehabilitation. /10/

B. DEMOGRAPHY OF THE WATERFRONT AREA

This profile of the waterfront area is derived from 1980 Census data for Census tracts 19, 20, 21, 32, and 33. Tract 20 encompasses the waterfront itself, while tracts 21 and 32 are immediately adjacent; tracts 19, 22, 31 and 33 are east of San Pablo Avenue. For purposes of this report, these five Census tracts comprise the waterfront area. These tracts were chosen for study because they are adjacent to the waterfront, and potentially will experience spillover or gentrification effects from development there.

VIII-3

FIGURE VIII-1

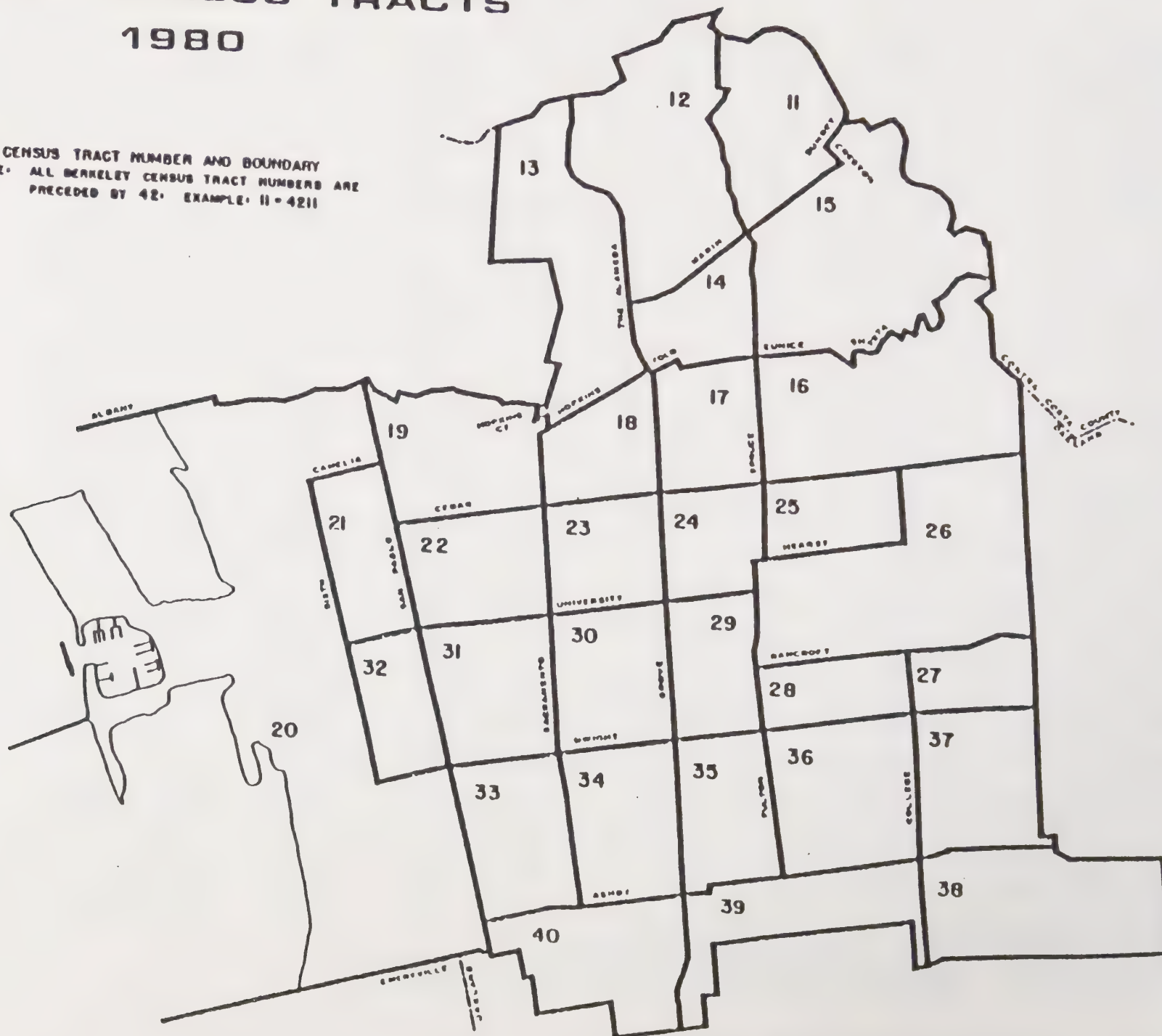


Table VIII-1
Demographic Characteristics
City of Berkeley

Variable	City	CT20	CT19	CT21	CT32	CT33	ALL CT	% City
Population(1)	103,328	977	3,721	2,556	2,652	3,339	13,245	13%
White(6)	68,198	536	2,013	724	601	395	4,269	6%
% (6)	66	55	54	28	23	12		
Black(6)	20,770	300	965	1,220	1,601	2,755	6,841	33%
% (6)	20	31	26	48	60	83		
Families(2)	19,239	232	933	615	615	868	3,263	17%
Households(3)	44,704	442	1,737	1,068	1,061	1,528	5,836	13%
65 or Older(8)	11,132	112	523	281	200	613	1,729	16%
%	11	11	14	11	8	18		
Yearly Occupancy(3)	46,319	462	1,790	1,130	1,166	1,568	6,116	13%
Units Occupied(3)	44,704	442	1,737	1,068	1,061	1,528	5,836	13%
Vacant Units(3)	1,615	20	53	62	105	40	280	17%
% Vacant	3.5	4.3	3.0	5.5	9.0	2.6	4.6	-
People per Unit (17)	2.11	2.16	2.14	2.39	2.49	2.18	-	-
Renter Occupied(7)	27,821	247	814	655	753	724	3,193	11%
% Rented	62	56	47	37	65	46	52	
Owner Occupied(7)	16,883	195	923	413	308	804	2,643	16%
% Owner Occ.	38	44	53	39	29	53		
Median Rent(10)	\$226	\$144	\$220	\$182	\$172	\$170		
Median House(9)	\$96,400	\$42,500	\$73,700	\$45,400	\$53,500	\$52,300		
1 Unit/Address(5)	25,725	354	1,426	707	584	1.169	4,240	16%

Table Definitions:

CT: Census Tracts

Yearly Occupancy: Number of year round housing units

Median House: Median value of an owner-occupied non-condominium unit.

1 Unit/Address: Year round housing units with one unit at an address.

Source: 1980 Census Area Profiles, Summary Tape File 1A/CT1A
Census Bureau, National Data Center, March 11, 1982.

Figure VIII-1 is a map showing the location of the five Census tracts. Census tract 20 extends from Albany to Emeryville, and is variously bounded by Sixth, Camelia, Dwight and San Pablo Streets. It has a population of 977 persons, significantly less than the other tracts. The other four tracts extend as far as Albany on the north, Ashby Avenue on the south, Sacramento Street on the east and Sixth Street on the west.

Census tracts 21, 31, and 33 and portions of Census tracts 20 and 22 have been designated a part of the Neighborhood Strategy Area by the City of Berkeley. All but Census tract 19 are in the boundaries of the city's Rental Rehabilitation Areas. West Berkeley, a rapidly changing section of the City, is the subject of further planning efforts by the City Planning Division, which is in the process of creating a West Berkeley Area Plan.

All five Census tracts together contain a 1980 population of 13,245 or 13% of the population of Berkeley. They account for 33% of the city's black residents, 6% of its white residents and 16% of the over 65 residents. These statistics indicate that the waterfront area is comprised of neighborhoods with significant numbers of elderly black residents. There are 5,836 households and 3,263 families in the waterfront area. These statistics are presented in detail in Table VIII-1.

Although the number of households in the waterfront area is proportional to the overall population (13%), there are proportionately more families (17%). /11/ Given the higher proportion of families, it is not surprising that the average household size in these tracts is higher than the 2.11 persons per household found in the city as a whole, ranging from a low of 2.16 in Census tract 20 to a high of 2.49 in Census tract 32.

The five Census tracts include 13% of the city's housing stock and 13% of the occupied housing units, but 17% (280) of the vacant units. The high proportion of vacancies include 18 units for sale and 133 units for rent. The highest vacancy rate (9% or 105 units) is in Census tract 32.

The waterfront area contains 11% of the city rental housing and 16% of the owner-occupied housing. In all but Census tract 32, the proportion of owner-occupied housing is greater than in the city as a whole, and the proportion of renters is correspondingly lower. Fully 37% (1,346) of the city's 3,655 black homeowner households reside in these five Census tracts, as do 30% (1,557) of black renting households.

Median rent is somewhat lower in all five tracts than the city wide median of \$226. The same is true for the median value of owner-occupied housing: city wide the median value is \$96,400 while it ranges from a low of \$42,500 in Census tract 20 to a high of \$73,700 in Census tract 19. The five tracts contain 16% of the city's detached, one-unit housing and contains 11% (2,731) of the housing constructed in 1939 or earlier. These statistics are presented in Table VIII-2.

Per capita income in the five Census tracts is lower than the \$8,462 for the city as a whole, ranging from a low of \$4,973 in Census tract 32 to a high of \$8,075 in Census tract 19. Mean household income is also below the \$18,942 of the city as a whole. Only Census tract 19 is above the \$13,506 median household income of the city as a whole, with \$15,064.

Table VIII-3 shows income distribution in relation to the poverty status standard. /11/ For the city as a whole, 14,263 persons had an income in 1979 that was less than 75% of the poverty level. The five Census tracts account for almost 11% (1,525) of these people, the greatest concentration (550) occurring in Census tract 32. Another 11,136 residents of Berkeley had incomes 75% to 124% of the poverty level. Almost 17% (1,890) of these reside in the five tracts, again with the greatest number (526) in Census tract 32. Census tract 19 shows the greatest number of persons (3,140) with incomes of 125% or greater of the poverty standard.

C. HOUSING POLICIES

The City of Berkeley has articulated housing policies and programs in its Housing Element (revised draft, November 1, 1984), and Housing Action Strategy (December 14, 1984). The former puts forth an analysis of Berkeley's housing problems along with goals and policies to address housing problems. The latter outlines major actions to be taken by the city to solve housing problems. The findings of each document provide guidance in addressing housing in relation to the waterfront.

The Housing Element cites affordable housing and the maintenance of existing housing as important problems facing the city. It recognizes the need to expand the supply of housing, although little undeveloped land is available for this purpose, other than the waterfront. The housing needs of special groups such as low and moderate income black families, the elderly, students, the disabled and single parent households are of particular concern, as the city places a high value on maintaining diversity in its population. These groups face problems of high housing costs, lack of housing with suitable physical characteristics, low vacancy rates and inadequate neighborhood services.

Table VIII-2
Housing Tenure and Income
City of Berkeley

Variable	City	CT20	CT19	CT21	CT32	CT33	GT	
Black Home Owners	3,655	19	257	253	164	653	1,346	37%
Black Renters	5,161	80	136	266	483	592	1,557	30%
Mean Gross Rent	\$267	\$208	\$263	\$232	\$223	\$206	-	-
Median Gross Rent	\$245	\$166	\$241	\$216	\$217	\$210	-	-
Median Hshld. Inc.	\$13,506	\$12,006	\$15,064	\$12,743	\$8,929	\$10,641	-	-
Mean Hshld. Inc.	\$18,942	\$15,631	\$17,124	\$15,758	\$12,119	\$13,436	-	-
Per Capita Income	\$8,462	\$7,524	\$8,075	\$6,548	\$4,973	\$6,203	-	-
Unit Pre-1939	24,335	176	966	514	471	604	2,731	11%

Table Definitions:

Homeowners and renters refer to households, not individuals.

Hshld. Inc.: Household income.

Unit Pre-1939: Dwelling units built 1939 or earlier.

GT: Grand total for the five Census tracts; percent refers to five tracts as a percent of the city.

Source: 1980 Census Area Profiles, Summary Tape File 3A(ST3A)
ABAG Regional Data Center, March 11, 1982.

Table VIII-3
Poverty Status
City of Berkeley

Poverty Status 1979	City	CT20		CT19		CT21		CT22		CT32		CT33		Total
Below 75%	14,263	93	0.6%	265	1.9%	291	2.0%	308	2.2%	550	3.9%	326	2.3%	12.9%
75-124%	11,136	152	1.4%	295	2.6%	267	2.4%	477	4.3%	526	4.7%	650	5.8%	21.2%
125-149%	4,514	61	1.4%	177	3.9%	154	3.4%	90	2.0%	166	3.7%	164	3.6%	18.0%
150-199%	8,771	168	1.9%	444	5.0%	219	2.5%	290	3.3%	361	4.1%	318	3.6%	20.4%
200-Above	56,635	507	.9%	2,519	4.4%	1,583	2.8%	1,941	3.4%	1,030	1.8%	1,863	3.3%	16.6%

Table Note:

The percentages in the first column refer to the income of persons in relation to the poverty level.

Source: 1980 Census Area Profile, Summary Tape File 3A(STF3A)
ABAG, Regional Data Center, March 11, 1982

Berkeley housing need has been quantified in accordance with ABAG's methodology which takes into consideration market demand for housing, employment growth projections, available land, commute patterns and other variables. Based on this approach, Berkeley is estimated to need 1,611 units between 1980 and 1990. These units break down as follows:

Housing type	714 single family units
	897 multiple family units
Tenure	609 owner-occupied housing
	1002 rental units
Cost	483 (30%) very low income households
	274 (17%) low income households
	306 (20%) moderate income households
	548 (34%) above moderate income households

This need can be met through new construction, rehabilitation of vacant units, group housing and additions to existing housing. On December 19, 1984, the City Planning Commission adopted a second unit ordinance which will permit additional apartments in R-1 zones.

The city has identified a number of sites that could be used for new construction. These are listed below, with information in the amount of land available or number of units that could be accommodated, if known.

Waterfront	10 to 70 acres	
In-fill sites (primarily Berkeley Hills)	600 units	
Santa Fe right-of-way	1/2 acre	
University of California under-utilized sites	don't know	d.k.
School District surplus sites	21 acres	
West Berkeley Redevelopment Area	60 units (approx.)	
School for the Deaf and Blind	50 acres	

In order to address the city's housing needs, the Housing Action Strategy recommended that the city take five major initiatives. All of these have potential application to the waterfront either directly or indirectly (see Opportunities and Constraints).

The initiatives are:

1. New Construction - The city should take the measures necessary to increase the supply of new units in Berkeley, consistent with other policy goals.
2. Diversity Maintenance - The city should operate its programs in a manner that allows threatened populations to stay in Berkeley for the long term and maintain the city's diversity. New programs to achieve this goal should be developed.
3. Other Additions - The city should take the measures necessary to increase the supply of housing units through methods other than new construction in a manner consistent with other policy goals.
4. Rental Rehabilitation - The city should direct its rehabilitation programs to renters occupied, as well as owner occupied units.
5. Demand Generators - The city should assure that major demand generators provide housing to mitigate their impact on the Berkeley housing market.

Point five clearly relates to the waterfront. To the extent that impacts are generated, housing strategy actions should be undertaken as a means to mitigate the impacts of development.

The city has undertaken and/or proposes to commence a wide array of programs to implement housing policies, ranging from low income public housing to mortgage revenue bonds for purchase of single family housing. As these programs are too numerous to list here, the reader is referred to the Housing Action Strategy for details on each. In west Berkeley, the city is undertaking a rehabilitation program involving vacant units. One project is in the Delaware Street Historic District where 12 vacant units will be restored for residential and commercial uses. Two additional infill structures will be developed with 26 dwelling units; 19 for home ownership and seven Section 8 rental units. Residential development to be located between Hearst, Cedar, Fourth and Fifth Streets is currently under study, and is expected to result in the rehabilitation of 15 buildings and the construction of two to eight new units on vacant lots.

The Residential Rental Inspection Program is also active in west Berkeley. This systematic code enforcement program requires owners to make housing repairs, and has resulted in about 500 inspections citywide on an annual basis.

A part of the waterfront area will receive funds for housing improvement under the Rental Rehabilitation Program. Specifically, this program involves the Neighborhood Strategy Area between Delaware and Cedar Streets. Under this program, it is expected that at least 86 units will be rehabilitated. As this is a matching program, the \$5,000 maximum per unit from the program must be matched with a like amount of private funds. Other programs in the Neighborhood Strategy Area are Section 312 loans for rehabilitation of single and multiple family low and moderate income housing and the Municipal Loan Program for rehabilitation of primarily owner-occupied housing.

D. HOUSING OPPORTUNITIES

Planning for the Berkeley waterfront creates the opportunity to address the city's housing problem and implement strategies outlined in the city's draft Housing Action Strategy. As discussed above, strategies to address the housing problem are as varied as the types of housing needs that exist. There are widespread problems of overpayment, lack of housing with suitable physical characteristics, supply constraints and deterioration, to name but a few. Corresponding to these are existing programs for housing assistance payments, construction programs to serve the needs of special groups, rehabilitation programs and code enforcement programs.

Alternatives for waterfront development that include housing can make significant inroads with respect to increasing the supply of housing, as the waterfront could accommodate housing at a neighborhood scale or a regional scale. But other land uses proposed for the waterfront may increase demand for housing and have spillover effects on neighborhoods adjacent to the waterfront. By increasing housing demand with office construction, for example, new housing either on or off the waterfront would not result in a supply increase that would benefit the city in terms of existing housing need, unless the amount of housing supplied exceeds the demand induced by offices. However, if such housing is not provided as an offset, commercial development will have a spillover effect on existing neighborhoods. This could manifest itself in gentrification. Thus, one initiative in the Housing Action Strategy is to require demand generators to provide the housing for which they are responsible. It is in this context that housing opportunities on the waterfront can be discussed, since an "all housing" alternative is not under consideration. Such an alternative would have other problems, and gentrification would still be a potential threat.

The opportunity to provide housing results from the size of the site, which can support a critical mass of housing and a significant amount of other uses so that an urban neighborhood could be created. With 1500 units for example, a population in excess of 3000 persons would reside on the waterfront.

This is enough to support an elementary school, neighborhood retail and other services and amenities. It is enough housing to support a significant amount of low and moderate income housing as part of the waterfront plan. Ratios as high as 20% low and moderate will be tested when the alternative waterfront plans are evaluated. Combined with commercial and recreational facilities, 1500 units can help create an active 24-hour and seven-day-a-week environment.

Assuming commercial development on the waterfront involves developer exactions for housing beyond the level needed to offset housing demand induced by the development, there will be opportunities to produce housing to serve existing and projected need. ABAG has provided estimates for the existing need in Berkeley today, and the projected need. Existing need as of 1980 was 761 for the city, while projected need (1980-1990) is 1,611. Commercial development on the waterfront could provide a part of this needed new construction.

There are a variety of other mechanisms to produce housing that can be combined with programs already on the books — programs with deep subsidies such as public housing; programs with shallow subsidies such as mortgage subsidies under mortgage revenue bonds; programs to help special groups such as adding space to existing buildings to provide family housing or second units; and new programs such as establishing a housing fund to be spent as the city sees fit to implement the Housing Strategy.

Likewise, there are a variety of programs that can be funded through developer exactions to foster neighborhood preservation, whether needed as a result of gentrification threats or other causes. These include the Rehabilitation Loan Matching Program, code enforcement inspections, the Municipal Loan Program and the Rental Rehabilitation Program.

The depth and breath of subsidies for housing and the specific characteristics of a program for housing are policy issues that the city must ultimately decide, although they will be explored after the alternative plans are evaluated. Once the implications of an alternative are understood, an appropriate housing response can be fashioned.

E. CONSTRAINTS ON HOUSING

The constraints to housing on the waterfront are physical and economic. Noise, odors and air pollution from the freeway limit the areas of the waterfront on which housing can be located. Methane gas odors from the landfill will make upwind parcels undesirable for housing. Strong winds along the water's edge could make residential open space unuseable. Al-

though these are disincentives to housing, they are amenable to mitigation. Other sections of the waterfront are sensitive environments on which no development should occur. Specifically, this includes the south basin, brickyard cove and the meadow.

Soils conditions on the waterfront will require costly foundation work which will add to the price of housing. These costs will manifest themselves in the type of residents that will be attracted to the site, that is, those who can pay the premium. This effect can be controlled through economy of scale, although that may in turn result in medium and highrise buildings, types which are not likely to gain acceptance in Berkeley.

Berkeley's housing preferences and policies for neighborhood preservation may also be seen as constraints on waterfront housing. There is concern that establishing a waterfront community will have a gentrifying effect on existing neighborhoods. If such a community becomes an upper income enclave, there could be spillover effects that cause land value increases in west Berkeley and the Gilman neighborhood.

There appears to be little support for residential development that serves a regional market or satisfies the housing demand generated by office centers such as San Francisco. This too is a constraint to housing development on the waterfront.

Finally, to the extent that housing development on the waterfront has spillover effects, it could result in upgrading of the housing stock, especially in areas like west Berkeley where housing values are low and housing improvement needs are high. These are the conditions under which gentrification can take hold. However, spillovers will obviate neighborhood preservation policies that seek to retain cultural diversity in Berkeley. The city's housing policies are not predisposed to housing stock improvements if the cost is social displacement. Unless this problem can be solved, there is a policy constraint to housing on the waterfront. It should be noted that any land use that change improve and upgrade the waterfront, including a park, has the potential to increase surrounding land values. Consequently, the tendencies for gentrification were inherent in waterfront development.

Footnotes

- /1/ This section of the report uses 1980 Census data because it is the most complete source of demographic data for the City of Berkeley. Although there are more recent estimates of population, these sources do not offer a complete and interrelated statistical profile of the city.

The reader should be aware that the values for a given datum collected by the Census differ slightly from one computerized data tape file to another, related to projections based on sampling and the 100% Census. Variables are also defined differently depending on what source is used. In this report, each table indicates the data tape from which the statistics were drawn.

- /2/ City of Berkeley, Housing Element, Appendix A, Table 1.1., page 1-3.
- /3/ City of Berkeley, Housing Element, Appendix A, page 1-9; income figures were actually collected in 1969 and 1979 for the 1970 and 1980 Censuses, respectively.
- /4/ City of Berkeley, Housing Element, Appendix A, page 3-2.
- /5/ The Housing Element notes that the 1980 Census originally indicated that Berkeley had a net loss of low dwelling units since 1970. However, a revision to the 1970 Census indicated a net gain of 200 units between the two Censuses. The Housing Element is based on the original 1970 Census estimate because complete statistics were not available for the revised figure e.g., units for rent, units for sale and so forth.
- /6/ City of Berkeley, Housing Element, Appendix A, page 3-5.
- /7/ More recent information estimates the average sales price of a Berkeley home at \$160,242 as of March 1984. Source: Berkeley Board of Realtors, as cited in the City of Berkeley; Housing Action Strategy, December 14, 1984.
- /8/ City of Berkeley, Housing Element, Appendix A, page 2-10.
- /9/ City of Berkeley, Housing Element, Appendix A, page 3-7.
- /10/ City of Berkeley, Housing Element, page iii.

- /11/ In this context, "proportional" is used in reference to population. If the five tracts have 13% of the population, a proportional share of the households and families would likewise be 13%. As the five tracts include 13% of the households in the city but 17% of the families, it is representative of the city on number of households, but has 3% more families.
- /12/ Poverty status as used in the Census is a function of family size and food consumption requirements. As an example, the poverty threshold for a family of four with two related children under 18 was \$7,356 in 1979. The values are periodically adjusted according to the Consumer Price Index. Source: ABAG, 1980 Census Handbook, published February, 1983, page 66-69.

IX. Employment

PLANNING ANALYSIS & DEVELOPMENT

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BERKELEY WATERFRONT PLAN

Employment Setting

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January 18, 1985

IX. EMPLOYMENT SETTING

A. EMPLOYMENT DEMOGRAPHICS OF BERKELEY

The civilian labor force in Berkeley was 54,897 in 1980, according to the Census. /1/ At the time of the Census, there were 3,732 unemployed persons, for an unemployment rate of 6.7%. For people who were unemployed in the year, the mean number of weeks of unemployment was 11.5. Another 34,827 Berkeley residents identified themselves as not in the labor force. This group includes "discouraged workers" or people who have stopped looking for work. The size and composition of the discouraged worker group is not known, nor can it be estimated from Census data. These figures are shown in Table IX-1.

Estimates by the California Employment Development Department for 1984 projected a civilian labor force of 59,942, and increase of about 5,000 since 1980. Of this number, 56,155 were employed while the number of unemployed remained virtually constant at 3,787. The unemployment rate dropped to 6.3%. /2/

Table IX-1 shows that of those reporting place of employment, 48% work in Berkeley and 52% work outside Berkeley. In 1980 however, there were slightly more jobs in the city (55,000) than there were employed persons 54,897. About 33,200 people commute to the city for work particularly for UC Berkeley. /3/ Nonetheless, Berkeley has been losing jobs overall. Between 1970 and 1980, jobs have declined 6% while households have only declined 2%. /4/

The 1980 Census indicates that 81% of the working population are between the ages of 18 and 44 and 19% between the ages of 45 and 64. The latter age group declined by 4000 people between 1970 and 1980. Of the total number of Berkeley residents working, 89% have graduated from high school.

Between 1970 to 1980, Berkeley's population declined 13%, including 13% in the white population and 25% in the black population. The Census indicates that of 43% of the unemployed workers are minorities and 57% are white, reflecting the national trend of minorities experiencing a disproportionate amount of unemployment.

B. EMPLOYMENT CHARACTERISTICS OF THE WATERFRONT AREA

In the Census tracts near the waterfront area reside almost 10,000 workers, or about 18% of the city's civilian labor force. For purposes of this report, the waterfront area is defined as the waterfront itself and Census tracts spatially near the waterfront planning site. The waterfront is Census tract 20; nearby tracts are 19, 21, 22, 31, 32, and 33, as shown in Figure

Table IX-1
Labor Force Characteristics
City of Berkeley

	City	CT20	CT19	CT21	CT22	CT31	CT32	CT33	Total #	CT %
Labor Force Status										
Civilian Labor Force	54,897	518	2,134	1,365	1,823	1,741	1,011	1,357	9,949	18.0
Male	28,350	276	1,075	735	980	884	567	626	5,143	17.5
Female	25,547	242	1,059	630	843	857	444	731	4,806	18.8
Employed	51,165	518	1,971	1,309	1,667	1,526	916	1,201	9,118	17.8
Unemployed	3,732	-0-	163	56	156	207	95	156	833	22.0
% Unemployed	6.7	-0-/1/	7.6	4.1	8.5	11.9	9.4	11.5		
Mean Number of Weeks Unemployed (male)	11.5	25.4/1/	15.0	13.8	14.2	15.6	16.7	23.3		
Not in Labor Force/2/	34,827	284	1,047	695	892	1,298	974	1,375	6,565	18.8
Work in Berkeley	22,192	157	659	515	622	607	312	312	3,184	14.3
%	48	41	36	42	41	48	37	27	39	
Work outside Berkeley	23,893	229	1,193	704	892	654	523	839	5,034	21.0
%	52	59	64	58	59	52	63	73	61	

Table Notes:

1. These people did not consider themselves unemployed at the time of enumeration, i.e., March 1980.
2. Includes discouraged workers.

Source: ABAG, 1980 Census Material, (STF-3A), March 11, 1982, Labor Force Characteristics and Mobility Characteristics.

BERKELEY CENSUS TRACTS 1980

11 1980 CENSUS TRACT NUMBER AND BOUNDARY
NOTE: ALL BERKELEY CENSUS TRACT NUMBERS ARE
PRECEDED BY 42. EXAMPLE: 11-4211

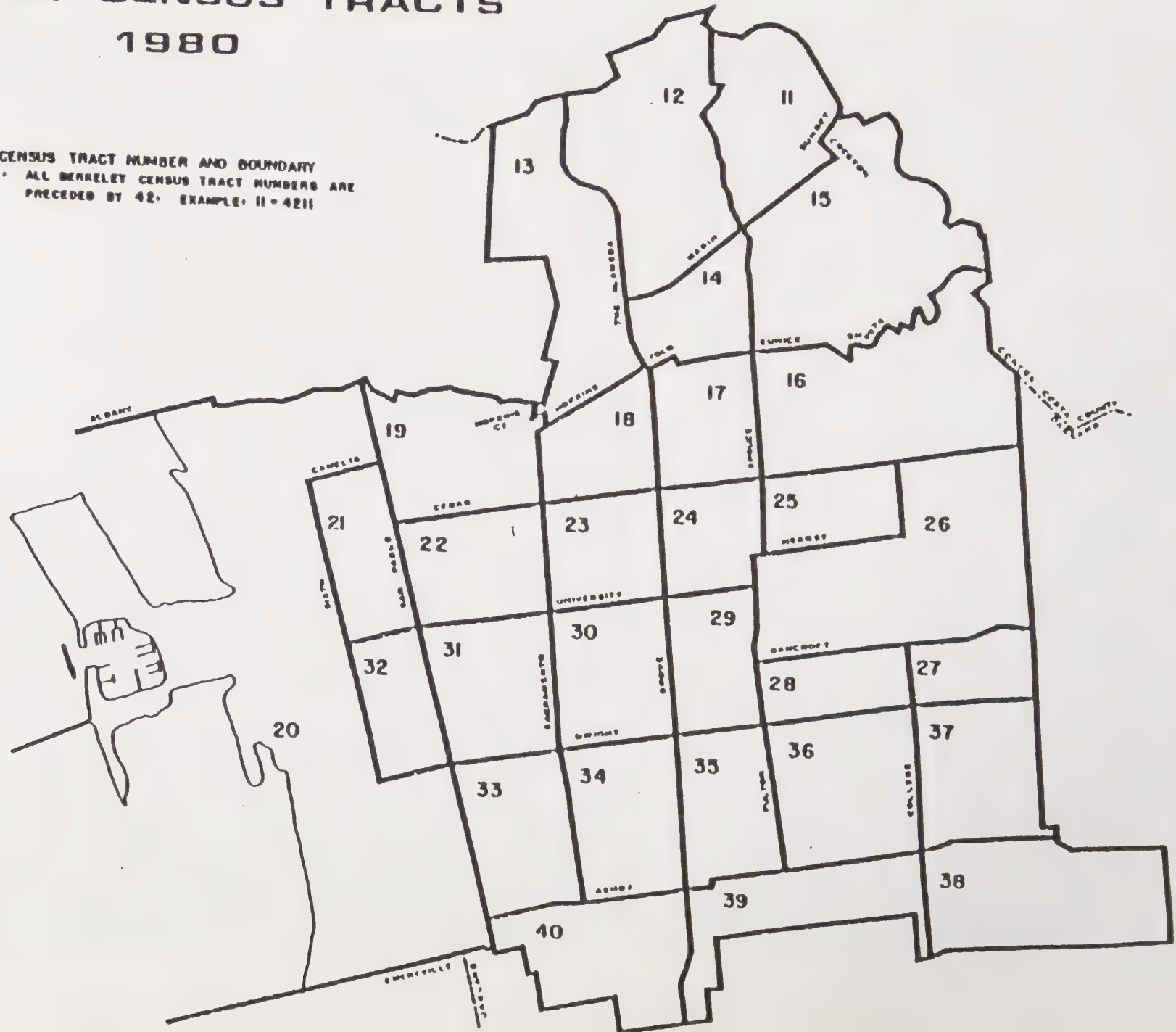


FIGURE IX-1

IX-1. These tracts were chosen for analysis because they are close enough to the waterfront to potentially experience spillover effects from waterfront development. Table IX-1 shows the distribution of workers by Census tract, including the relative numbers of males and females. The seven tracts together have about 18.1% of the male work force and 18.8% of the female work force. However, they tracts have 22.3% of the city's unemployed (as of 1980). The highest unemployment rates are in Census tracts 31, 32, and 33. These are not the highest in the city, however, as south Berkeley had a 1980 unemployment rate of 14.8%. Tracts 31, 32 and 33 have a high proportion of people who are not in the labor force many of whom are either elderly or discouraged workers.

Employment in west Berkeley is of particular concern in the city because of the comparatively high unemployment. As shown in Table IX-2, this area had an unemployment rate of 11% in 1980, compared to 7% in the city as a whole. (Note these statistics do not correspond to precisely the same Census tracts listed in Table IX-1.) The west Berkeley population is older and less educated than the city as a whole.

Table IX-3 presents the occupational distribution of the Berkeley labor force. The largest occupational group is professionals (15,442); followed by administrative; support and clerical workers (8,780); executive, administration and managerial (6,109); and "other services" (5,344). Together, these groups account for 70% of the working population.

This table also compares the occupation of west Berkeley workers with the city as a whole. West Berkeley has proportionately more blue collar workers than the city, represented by residents employed in crafts, repair services, machine operators, assemblers and the like. There are proportionately more in services and clerical, and dramatically fewer in professional and technical occupations.

Table IX-4 shows employment and businesses in Berkeley by industrial category. There are a total of 51,165 workers and 12,200 business, for an average of 4.2 employees per business. The largest number of employees are in educational services: 13,062 people or 25.5% of the work force. The next largest number of employees are in retail trade: 6,564 people or 12.8% of the force; and "other" professional and related services: 6,016 or 11.8% of the labor force.

TABLE IX-2
 Characteristics of Berkeley and
 West Berkeley Residents, 1980

	<u>Berkeley</u>		<u>West Berkeley</u>	
<u>Population</u>				
Race	103,328	100%	29,932	30%
All Persons	69,159	67%	9,834	30%
White	20,671	20%	16,363	55%
<u>Gender</u>				
Male	52,378	51%	14,166	47%
Female	51,000	49%	15,776	53%
<u>Working Age Population</u>				
18-44 Yrs.	61,730	82%	14,350	73%
45-64 Yrs.	14,669	19%	5,381	27%
<u>Education</u>				
% High School Graduates		89%		70%
<u>Employment</u>				
Civilian Labor Force, 16 yrs. and older				
Total	54,897		14,443	
Unemployed	3,732	7%	1,577	11%
<u>Place of Work</u>				
In City of Residence	22,192	45%	4,556	37%
Outside City of Residence	23,893	7%	6,446	52%
Not Reported	3,682	7%	1,303	11%

Source: ABAG, 1980 Census Materials, Summary Tape File 3A, March 11, 1982.

TABLE IX-3
Berkeley Occupational Distribution, 1980

OCCUPATION OF LABOR FORCE	BERKELEY		WEST BERKELEY	
	NUMBER	PERCENT	NUMBER	PERCENT
Executive, Administration & Management	6,109	11.9	1,232	9.6
Professional Specialty	15,442	30.2	2,052	15.9
Technical and Related Support	3,885	7.6	667	5.2
Sales	4,085	8.0	972	7.6
Admin, Support, incl. Clerical	8,780	17.2	699	20.9
Private Household	493	1.0	240	1.9
Protective Service	398	1.0	151	1.1
Other Service	5,344	10.4	1,896	14.7
Farming, Forestry, Fishing	538	1.1	176	1.4
Precision Production, Craft and Repair Services	2,964	5.8	1,205	9.4
Machine Operators, Assemblers, and Inspectors	1,261	2.5	631	4.9
Trans. and Material Moving	769	1.5	420	3.3
Handlers, Helpers and Laborers	1,097	2.1	524	4.1
TOTAL	51,165	100.0	12,865	100.0

Table Note:

Totals may vary from other tables because of variation in sources.

Source: ABAG, 1980 Census Materials, Summary Tape File 3A, March 11, 1982.

TABLE IX-4
BERKELEY EMPLOYMENT BY INDUSTRY-CITY OF BERKELEY

Industry	Employment		Businesses	
	Number	Percent	Number	Percent
Agriculture, Forestry Fisheries, Mining	749	1.5	122	1
Construction	1,816	3.5	366	3
Manufacturing				
Non-durable Goods	2,440	4.8		
Durable Goods	1,875	3.7		
Group total			1,220	10
Transportation	1,576	3.1		
Communications, other				
Public Utilities	694	1.4		
Group total			244	2
Wholesale Trade	903	1.8	610	5
Retail Trade	6,564	12.8%	4,148	34
Finance, Insurance, Real Estate	2,966	5.8	732	6
Services				
Business and Repair	3,018	5.9	-	-
Personal, Entertainment, Recreational Services	2,778	5.4	-	-
Health Services	4,005	7.8	-	-
Educational Services	13,062	25.5	-	-
Other Professional and Related Services	6,016	11.8	-	-
Group total			4,758	39
Public Administration	2,703	5.3	-	-
Total Employment, 16 years & Older	51,165	100%	12,200	100%

Table Notes:

In some cases, businesses were not broken down by subgroups, as way employment. Percentages may not add to 100 due to rounding.

Source: ABAG, 1980 Census Materials, 1980 Census Summary Tape File 3A and Business License Tax, Data Finance Dept., City of Berkeley.

There is no breakdown of the number of business establishments by service subcategory; overall, there are 4,758 service establishments, or 39% of all the businesses in Berkeley. This group employs about 62% of work force. Retail establishments account for about 34% of all businesses, and employ about 13% of the work force. An important characteristic of the labor force (not shown in the table) is the 55% growth in self employed workers in Berkeley between 1970 to 1980. This compares with a 34% growth rate for the San Francisco-Oakland Metropolitan Area (SMSA).

Table IX-4 also compares west Berkeley industrial sectors to the city as a whole. The major differences are in educational services and "other" professional and related services, where the proportions of west Berkeley residents are substantially below that of the city as a whole. West Berkeley residents show a somewhat greater tendency to be employed in retail trade; construction; manufacturing; transportation and communication; and personnel, entertainment and recreation services than the city as a whole.

C. ECONOMIC TRENDS AND BERKELEY'S EMPLOYMENT NEEDS

The California Employment Development Department estimates a total of 30,000 new jobs will be created in Alameda County during 1984 and 1985, a county wide increase of 6%. /5/ Manufacturing represents one-quarter (7,500) of the new jobs. Most of these jobs will be concentrated in Fremont and are related to the opening of the GM-Toyota plant and associated suppliers. Berkeley is not expected to gain any of these manufacturing job opportunities.

Services will contribute nearly one-quarter of Alameda County's expected job growth. Berkeley has a significantly higher concentration of jobs in this area than does Alameda County as a whole, and be can expected to share in this expansion.

Retail trade will contribute nearly one-fifth (6,000) of Alameda County's forecast job growth. Berkeley's retail sector is strong and will share in this expansion.

Transportation and public utilities will contribute 15% (4,700) new jobs to Alameda County's estimated job growth. Almost all of these jobs will be in the communications field and related to the new AT&T headquarters complex in Pleasanton. Berkeley is not expected to accommodate many of these jobs.

Government is the largest industrial sector in Alameda County and Berkeley. This sector is expected to sustain moderate growth outside of Berkeley due to

Table IX-5

Demographic Characteristics of Persons Registered for Employment

SEX	1983		1984	Percent Change	
Male	3,605		4,135	+14.7	
Female	3,710		4,065	+ 9.6	
TOTAL	7,315		8,200	+12.1	

RACE	1983		1984		Percent Change
	Number	Percent	Number	Percent	
White	3,360	50.0	3,290	40.0	- 2.1
Black	2,965	41.0	3,605	44.0	+ 21.6
Hispanic	405	6.0	600	7.0	+ 48.1
Amer. Indian & Nat. Alaskan	40	.5	35	.4	- 12.5
Asian & Pacific Islander	450	6.0	495	6.0	+ 10.0
Unavailable	95	1.2	160	1.9	-0-
TOTAL	7,315	100.0	8,185	100.0	+ 12.1

AGE GROUPS	1983		1984		Percent Change
	Number	Percent	Number	Percent	
15 & Under	5	.06	80	.97	+ 1,500
16-19	210	2.80	730	8.90	+ 248
20-21	390	5.30	475	5.70	+ 22
22-39	5,265	71.90	5,190	63.30	- 1
40-54	1,125	15.30	1,335	16.20	+ 19
55 & Over	320	4.30	385	4.60	+ 20

EDUCATION	1983		1984		Percent Change
	Number	Percent	Number	Percent	
0-7 (years Completed)	185	2	175	2	- 19.5
8-11	920	9	1,300	16	- 5.4
12	3,110	36	3,105	39	- 41.3
12 & Higher	5,635	57	3,350	42	- 40.6
TOTAL	9,850		7,930		

Percentages may not add up due to rounding off.

Source: California Employment Development Department.

defense installations and stable employment levels in Berkeley due to education employment.

Other industries will experience moderate job growth in both Alameda County and the City of Berkeley.

The greatest gains in Berkeley employment will be in services and retail trade. These two sectors represent large amounts of employment in Berkeley and historically provide the greatest number of entry level positions. The California Employment Development Department recognizes that entry level positions may not require previous experience, but often require a minimum level of education or training. Basic job holding skills are a characteristic often missing in discouraged workers. Therefore, few will compete for entry level positions without organized encouragement, training, and follow-up. /6/ clearly, services and retail will offer some job opportunities to the 3,800 people who are currently unemployed in Berkeley.

Whether those in need of employment will benefit from future growth depends on the match between the skills needed in the marketplace and the skills of the unemployed. The California Employment Development Department (EDD) maintains a statistical data base on unemployed persons who register for jobs at their Berkeley offices, which gives insight into the types of workers who are unemployed or underemployed. /7/ Not all the persons registered are Berkeley residents and not all unemployed persons are registered, yet the composite is the single best source available for defining a profile of persons seeking employment.

Table IX-5 shows that there was an increase of 12% in the number of people registering with EDD for jobs in 1984 than in 1983. There was 21% increase in the number of blacks who were registered for employment between 1983 and 1984, while white registration dropped by 2%. Although Hispanics account for a small proportion of those registering for employment, they experienced a 48% increase in registrants during the period. Clearly, the economic recovery did not benefit minorities to the degree it assisted whites.

There has been an increase in employment registration by teenagers. In 1983 3% of those registered were 19 years of age or under, but in 1984 the group rose to almost 10%. Associated with increased teenager registration is a rise in the numbers of registrants who have not completed high school: in 1983, 11% of the total registrants did not complete high school, but in 1984, 18% did not. Registration for persons having continued education beyond high school dropped from 57% in 1983 to 42% in 1984. This decrease of 15% can be attributed to major gains in professional employment during the recent

Table IX-6
Occupational Characteristics
of Persons Registering for Employment
with Employment Development Department

	1983	1984
Professional, Technical, Managerial	1,815	1,470
Clerical	1,670	1,780
Sales	235	235
Domestic Services	55	105
Food, Beverage, Prep, Services & Sales	1,020	1,215
Agricultural, Fishery & Forestry	45	75
Processing	135	180
Machine Trades	235	320
Benchwork	145	155
Structural Work	480	465
Miscellaneous	440	625
No Classification	<u>1,040</u>	<u>1,455</u>
GRAND TOTAL	7,315	8,080

Source: California Employment Development Department

economic recovery. The major occupational categories in which employment registrants applied for work or last found work are listed in Table IX-6. /8/

D. ECONOMIC DEVELOPMENT POLICIES OF BERKELEY

The city of Berkeley adopted an Economic Development Plan in 1980 that has the following objectives:

- Revitalize the local economy to increase available jobs.
- Encourage private, public and cooperative enterprises to share in the local economy in ways that are mutually supportive.
- Increase coordination and integration of community resource development.
- Promote a strong industrial base as a vital foundation upon which a stable economy can be built.
- Increase economic equity in land use decisions.
- Promote neighborhood revitalization programs in all depressed commercial areas.

Six major goals comprise the plan, and are elaborated by a set of specific objectives. Most germane to development on the waterfront is Goal 1 and five associated objectives; these are sited below:

Goal 1

Berkeley should revitalize its local economy to increase available jobs. This goal drives the employment machinery, and in a real sense provides the fundamental reason for pursuing all other goals and objectives of the plan.

Objective 1.1 Economic development should emphasize job creation.

Objective 1.2 The jobs that are provided should emphasize productivity.

Objective 1.3 Special efforts should be made to secure jobs for Berkeley residents.

Objective 1.4 Concentrated employment efforts should be directed to special areas of need.

Objective 1.5 Facilitate the coordination of district projects that may be complementary to each other.

The specific objectives (1.1 through 1.5) provide guidance in setting criteria for employment on the waterfront and particular concerns are employment actions that address the needs of west and south Berkeley.

E. OPPORTUNITIES FOR ECONOMIC DEVELOPMENT

The waterfront offers Berkeley the opportunity to pursue many facets of employment. The strongest sector of the economy in the city has been services, and this sector will account for the largest proportion of jobs, should offices be developed in the waterfront. The city would also share in finance, insurance and real estate job growth. The extent of such job growth is a function of the amount of office space built. As indicated in Table IX-6 above, there are many people seeking professional, technical and managerial jobs in Berkeley, as well as clerical and office support positions.

A mixed use approach to waterfront planning can also create opportunities for service jobs in the area of recreation, positions which often require less expertise and training than many office jobs. Associated with office and residential uses will be retail establishments which offer jobs in a sector in which Berkeley is particularly strong, and again requires relatively little advance training or expertise. There will also be opportunities for service jobs associated with hotels. The amount of jobs that can be created are a function of the type and mix of land uses. Typical employment generation rates for different land uses are given below:

Hotel :	0.60 - 0.80	employees per room
Offices :	3.60 - 5.00	employees per 1000 square feet
Commercial :	2.70 - 3.30	employees per 1000 square feet
R & D :	2.50	employees per 1000 square feet
Parking :	0.05 - 0.20	employees per 1000 square feet

Table IX-6 shows that there are many more people looking for work or better jobs than just the unemployed, who in Berkeley number about 3,800. Development on the Waterfront will create job opportunities for them, as well as the city residents.

While waterfront development can capitalize on the strengths of Berkeley's labor force, it can also generate programs to serve the unemployed, under employed and discouraged workers, particularly those in high need areas such as west and south Berkeley. A number of programs to foster employment

and economic opportunities are described in the city's Economic Development Plan, including:

- Job training programs to match workers with the skills needed;
- A revolving loan fund for projects in west and south Berkeley;
- Technical assistance for self-help projects;
- Minority contracts for business support services;
- On-site training facilities;
- Pre-vocational training;
- Support of private industry councils.

These and other programs can be created and combined to tackle the need in Berkeley unemployed while providing job opportunities for those who are underemployed or dissatisfied with their jobs. Through job training programs, people can be prepared for meaningful entry level positions and have a future. At the same time the mix of job opportunities could be structured to include those who are in need of employment, if only on a transitory basis. For example, the high number of teenagers seeking employment will not normally qualify for entry level positions because of their lack of formal education and training. Nonetheless, they require jobs, and can fill many sales and clerical positions. They would gain valuable experience in simply holding a job, and will be better prepared for work responsibilities in the future.

FOOTNOTES

/1/ ABAG, 1980 Census Materials, Summary Tape File 3A, Labor Characteristics.

/2/ Employment Development Department. Report 400R-Coastal. Monthly Labor Force Data for Costal Area. September 1984.

/3/ City of Berkeley, Housing Element, Appendix A, page 1-6.

/4/ Ibid, Housing Element.

/5/ California Employment Development Department, Employment Data and Research Division. Annual Planning Information Alameda County 1984-1985, May 1984.

/6/ California Employment Development Department, Bob McLaughlin, Analyst, Employment Data and Research, November 8, 1984.

/7/ California Employment Development Department, Table 6. All Individuals, Degree of Service Provided Applicants, September 30, 1982, September 30, 1983, June 30, 1984.

/8/ Occupational categories assigned to registrants were based on interviews with a job counselor at the California Employment Development Department who assessed the individuals' educational background, work experience and suitability for a particular job within the occupational categories. Occupational categories are those defined in the Dictionary of Occupational Titles by the U.S. Department of Labor.

X. Market Considerations

XI. Fiscal Implications

MARKET CONSIDERATIONS
AND
FISCAL SETTING

BACKGROUND REPORT FOR THE
BERKELEY WATERFRONT PLANNING PROCESS

BY
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JANUARY 1985

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INTRODUCTION

The purpose of this background report is to assess the market, financial and fiscal considerations involved in preparing a plan for the Berkeley waterfront.

MARKET

The term "market" as used in this report refers to the supply of and demand for the various land uses proposed for the site. There are markets for each of the proposed land uses, such as housing, office space, hotel rooms, restaurants, and recreation. Market demand refers to the likelihood of potential purchasers (customers or clients) paying to use the site, which in turn depends on the price of the services, and competition from other sites in the area. Market supply depends on the willingness and ability of developers (who could be public or private) to provide the necessary land improvements.

MARKET AREA

The term "market area" refers to the appropriate geographic place at which certain economic activities occur. Some activities located at the Berkeley waterfront site would draw people from only a limited range, while some others may attract people region-wide. Accordingly, the market area may vary depending on the uses being considered. In preparing this report many important assumptions had to be made concerning the extent of the relevant market areas.

THE MARKET AREA

The Berkeley waterfront is truly a regional site. Because of its central location, size and amenities, it can support activities which require drawing patronage from areas outside the immediate Berkeley environment.

One indication of the regional nature of the market area is driving time from the site. Going north from the site a motorist can be in: Albany in three minutes, Hilltop Mall in 10 minutes, Vallejo in 25 minutes, and San Rafael in 30 minutes. Going south the motorist can be in downtown Oakland in 10 minutes, the Oakland Airport in 20 minutes, Hayward in 20 minutes and Fremont in 30 minutes. Downtown San Francisco can be reached in 15 minutes, and the San Francisco Airport in 25 minutes. The Caldecott tunnel is only a 20 minute drive away, making the site accessible to Central Contra Costa County.

Regional public transit is available. The site is served by AC Transit buses. In addition the North Berkeley BART station is only a short transfer away, making the site potentially available to BART commuters.

THE JOURNEY TO WORK

One way to evaluate the limits of market areas is to consider the journey to work patterns. An indication of a self contained market area is where people both live and work. The Census Journey to Work data indicate that the majority of the labor force live and work in the same county.¹ That will vary from county to county as Table 1 shows. For example, 77 percent of the labor force residing in Alameda County also live in Alameda County. For Santa Clara, 93 percent of the employed residents both live and work in that county. Thus the Santa Clara market is distinct from the Alameda market.

Journey to Work data for Berkeley show that nearly half the employed residents of Berkeley work there. Approximately two thirds percent of the labor force either work in Berkeley or neighboring communities. There is a 16.8 percent commute to San

TABLE 1
REGIONAL JOURNEY TO WORK DATA
PLACE OF RESIDENCE BY PLACE OF WORK

	SF	SM	SC	ALA	CC	SOL	MAP	SON	MAR	JOBS	IMPORT	EXPORT
SAN FRANCISCO	284297	78706	7438	50895	38236	4371	549	6489	37662	508643	224346	46471
SAN MATEO	21443	100132	27676	15125	3972	809	149	800	2591	172697	72565	200868
SANTA CLARA	3721	33853	597714	27474	2389	19	0	0	400	665570	67856	45720
ALAMEDA	15101	6606	9850	387395	68443	4817	854	800	3526	497392	109997	114955
CONTRA COSTA	2430	738	696	18913	176957	10142	1126	377	1555	212934	35977	118626
SOLANO	349	208	12	1339	3600	72092	5572	40	547	83759	11667	23839
MAPA	14	10	18	48	299	2608	31808	270	77	35152	3344	8830
SONOMA	81	36	30	82	0	125	365	105945	1534	108198	2253	18570
MARIN	3332	643	0	1119	1687	948	215	9594	65827	83365	17538	47892
RESIDENTS	330768	301020	643434	502390	295583	95931	40638	124515	113719	2447998		
SAN FRANCISCO	86%	26%	1%	10%	13%	5%	1%	5%	33%	21%		
SAN MATEO	6%	33%	4%	3%	1%	1%	0%	1%	2%	7%		
SANTA CLARA	1%	11%	93%	5%	1%	0%	0%	0%	0%	27%		
ALAMEDA	5%	2%	2%	77%	23%	5%	2%	1%	3%	20%		
CONTRA COSTA	1%	0%	0%	4%	60%	11%	3%	0%	1%	9%		
SOLANO	0%	0%	0%	0%	1%	75%	14%	0%	0%	3%		
MAPA	0%	0%	0%	0%	0%	3%	78%	0%	0%	1%		
SONOMA	0%	0%	0%	0%	0%	0%	1%	85%	1%	4%		
MARIN	1%	0%	0%	0%	1%	1%	1%	8%	58%	3%		

SOURCE: METROPOLITAN TRANSPORTATION COMMISSION

TABLE 2
BERKELEY JOURNEY TO WORK DATA

=====

PLACE OF WORK OF BERKELEY RESIDENTS

	PERCENT
1. BERKELEY	48.9
2. OAKLAND	20.2
3. SAN FRANCISCO	16.8
4. RICHMOND	4.4
5. SAN LEANDRO	2.8
6. CENTRAL CONTRA COSTA	2.7
7. ALL OTHER PLACES	4.2
TOTAL	100

PLACE OF RESIDENCE OF BERKELEY WORKERS

1. BERKELEY	39.3
2. OAKLAND	18.2
3. RICHMOND	15.3
4. CENTRAL COSTA COSTA	9.1
5. HAYWORD	5.1
6. SAN FRANCISCO	2.7
7. SOUTHERN ALAMEDA COUNTY	2.5
8. ALL OTHER PLACES	7.8
TOTAL	100

Source: Metropolitan Transportation Commission, "1980 Census Journey to Work Data Release, 1980 Superdistrict to Superdistrict Commuters," 1984.

Francisco.

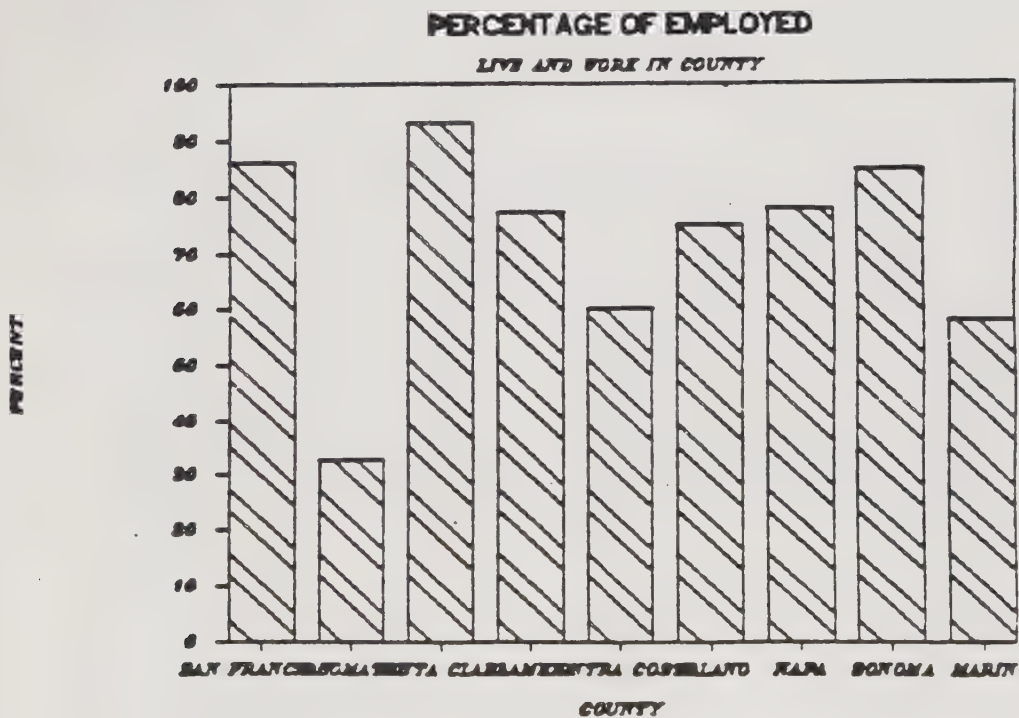
Based on reasonable continuation of the journey to work patterns, the market area for the Berkeley waterfront site can be divided into primary and secondary market areas. The primary market area is roughly coterminous with Alameda County.² The primary market area is that geographic area in which people and businesses seeking a location for an activity are relatively indifferent precisely where they locate, all things being equal. In this sense the Berkeley waterfront is competitive with Emeryville, the Albany Marina, Hilltop Mall and Oakland as a site for office space.

The secondary market area is where there is some attraction to locate there, but diminished because of distance or other factors. For example, the Berkeley waterfront site may have some attraction for individuals or businesses which otherwise would prefer Central Contra Costa County or San Francisco, but not as much as for Alameda County.

For this report we assume that the primary market area for each major land use category is Alameda County, and the secondary market areas are Contra Costa County and San Francisco. Activities which are attracted to Alameda County because of market and demographic factors would have to seriously consider the Berkeley waterfront, all things being equal. Activities attracted to Central Contra Costa County or San Francisco would give some thought to the Berkeley waterfront, but with all things equal, they would tend to go elsewhere. Activities normally attracted to San Mateo, Santa Clara or Solano Counties would not be attracted under any reasonable conditions to the Berkeley waterfront. They are all outside the relevant market areas.

Figure 1 Journey to Work

This figure depicts the percentage of the work force who both live and work in the same county.



Source: Metropolitan Transportation Commission, "1980 Census Journey to Work Data Release, 1980 County to County Commuters," July 1984.

HOUSING MARKET

Persons seeking new housing in and around Alameda County would likely give some consideration to housing at the Berkeley waterfront. The site is accessible to most of the economic activity, i.e., employment centers, shopping centers, recreation and established communities in the County.

The attractiveness of such housing would, of course, depend on the price, quality and amenities offered. At this point in time no prototypes of the housing have been developed, and there are no hard cost estimates. However, new housing built at the site would be at market rate, and would not likely be inexpensive. The costs of building on the site's soils and amortizing new utilities and infrastructure, would militate against low cost housing. New housing of good quality is being sold in the market area for \$100 to \$150 per square foot, and higher in San Francisco.³ Based on current construction costs and interest rates rental units (without subsidies) would have to have market rents in the range of \$700 to \$1,000 per month for a two bedroom unit to break even.

The 1980 Census of Housing shows that the median value of an owner occupied house in Berkeley was \$75,100 and an owner occupied condominium was \$92,500. New condominium units in the range of \$100,000 to \$150,000 in 1985 dollars are not out of line with the owner occupied market in Berkeley.

The median rent as reported by the Census of Housing in 1980 was \$212 per month. This is considerably at variance with the rents charged on new housing today. At current interest rates and construction costs a typical two bedroom apartment would rent in the \$700 to \$1,000 per month range in order to break even.

Only a small portion of the market area's households would be able to afford the new housing at market rates. The relevant market question is whether the site would be attractive enough to a sufficient number of those households who can afford to buy or rent the units.

A Caveat on Rent Control

Private developers (and lenders) would not find it attractive to build rental housing under the present rent control environment. Without arguing the merits of rent control in Berkeley, it is not realistic to expect private developers to build rental housing without some special incentives. Given the need for additional rental housing in Berkeley, the opportunity to build such housing could be pursued. The kinds of incentives which could, under some conditions prove persuasive, may relate to tie-ins with other kinds of commercial development.

The other likely developers of rental housing are non-profit developers, such as cooperatives or entities such as the University of California for its staff and students. Non-profit cooperatives which are not attached to the University (or other well financed entity) would likely require subsidies of some sort to prove viable. Here some kinds of public and private cooperation may be productive.

DEMOGRAPHIC BACKGROUND AND PROJECTIONS

There are two sources of the demand for new unsubsidized housing at the Berkeley Waterfront site. First, are the new household formations brought on by population growth. Second, are the existing households who for a variety of motives change residence each year. The latter group is the most important to the market for new houses and condominium units at the waterfront site. 4

The primary market area, Alameda County, will increase by 85,600 new households between 1985 and 2000. 5 Considering only the primary market area, an absorption of 200 new housing units per year (3,000 for the period) would represent three percent of the annual increase in new households. However, few newly formed households will have the financial means to purchase or rent new housing at the Berkeley waterfront. Examination of the income distribution of households shows that only ten to 15 percent of all households have the purchasing power for new housing which would cost over \$100,000 per unit or rent for \$800 and apartment.

Figure 2 Growth of Population and Households in Alameda County

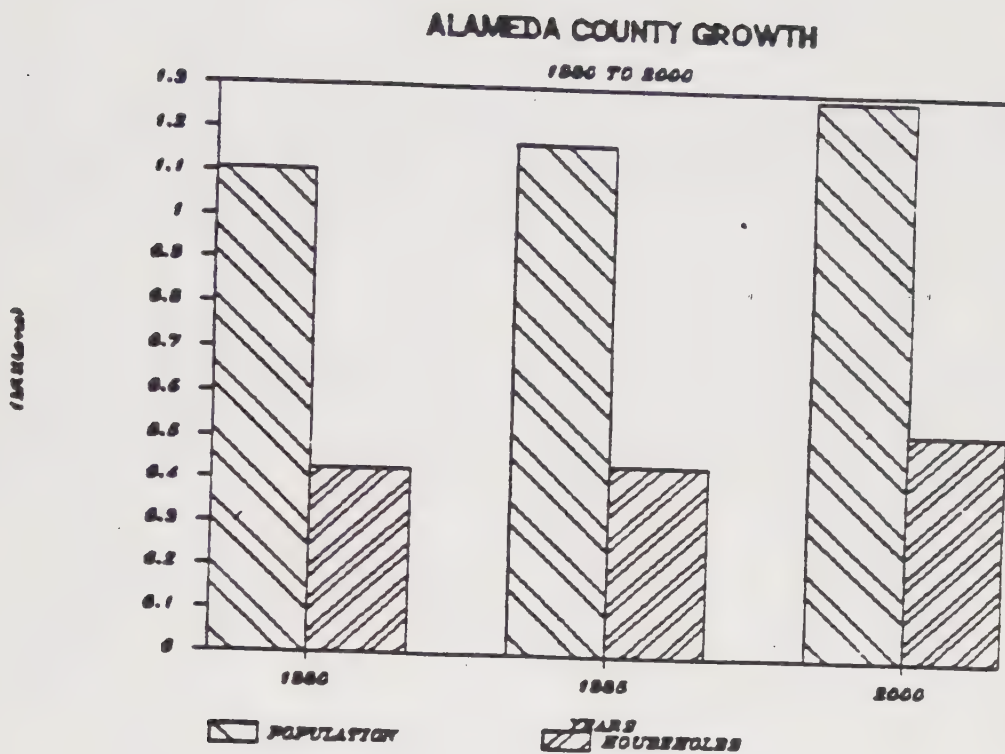


Table 3
Alameda County Income Distribution
1980

Income Class	Percent
Under 10,000	27.0%
10,000 - 19,999	26.1%
20,000 - 29,999	22.3%
30,000 - 39,999	13.2%
40,000 - 49,999	5.9%
Over 50,000	5.5%

Source: U. S. Census of Population 1980

Although household growth is important to the real estate market, the amount of real estate activity greatly exceeds the number of new households formed. In fact, the sum of new housing units started, existing houses sold and new mobile homes shipped exceeds the number of new households formed by two and one half times (as depicted in the Appendix).

Even without household growth in the market area a particular housing development can be successful if it can attract from among the large number of households who voluntarily change residence each year. Nationally, approximately 18 to 20 percent of all households move each year. (The statistics for 1980 to 1981 are also shown in the Appendix).

Between 1985 and 2000 approximately 80,000 households in the primary market area will change residence each year, of which 30 percent will be homeowners who will purchase a different house or condominium. In addition a small portion of renters who move will convert to ownership.

Examination of the composition of movers shows that the relevant portion of the market is those households who move within a metropolitan area. The number of households who move, and have the financial capability to buy new housing, is approximately five percent of all movers. Thus this component of the effective market is approximately 4,000 households annually. Because renters as a group have lower incomes than owners, the comparable figure for households who could rent new apartments is approximately two and one half percent of movers, or 2,000 annually.

The recent market activity in Alameda County is consistent with this estimate of the market. Since 1980 the number of new

housing units built per year has averaged slightly more than 6,000 units per year in Alameda County.

There is a substantial market for rental housing in the market area, in spite of relatively high rents for new units. Reconnaissance of the area (Walnut Creek, Concord, Montclair, Lake Merritt, Fremont, San Jose and Santa Clara) reveals that rents in new or refurbished good quality units are from \$450 to \$700 for one bedroom units, and from \$700 to \$1,200 for two bedroom units. These rents are high by historic standards, but renting is still less expensive than owner occupancy. Because of high interest rates many households cannot qualify for mortgages, so must be content with renting.

Builders specializing in rental units find they still can market new units, even at today's rents. New units are coming on the market in Santa Clara, Contra Costa and Southern Alameda County renting for approximately \$800 a month for a two bedroom apartment. The market does, however, go 20 percent higher depending on location and amenities. 6

The ability to compete in this market depends on price and level of amenities of competitive developments. There are presently at least five actual or potentially competitive developments in the market area. Harbor Bay Isle in Alameda has plans for 3,200 new units, of which some have already been built. Marina Bay in Richmond has plans for more than 1,000 new condominium units. Pacific Park Plaza in Emeryville contains 583 condominium units. City Center in Oakland has tentative plans for a residential component of 600 or more units. Kaiser Center development plans entail a possible residential tower of 400 or more units.

Consider, for example, that one alternative for the Waterfront development calls for between 1,500 and 3,000 housing units. Absorption of this amount would require capture of approximately three to seven percent of the relevant market each year. Given the competition, successful absorption of 150 to 200 units annually would be difficult but not impossible. Actual absorption would depend on the ability to create a viable residential environment at competitive prices.

That a viable residential environment can be created on the waterfront has already been established by the Emeryville development of 1,200 units. These units were initially rentals, but were quickly converted to condominium ownership in the mid 1970s. Sluggishness in the market for some existing developments in the area is more likely a reflection on current poor market conditions than on those units themselves. Lower interest rates would improve their prospects, as well as prospects for any housing on the Berkeley waterfront.

TABLE 3
RESIDENTIAL UNITS AUTHORIZED BY BUILDING PERMITS

	1980			1981			1982			1983			1984		
	SINGLE	MULTI	TOTAL	SINGLE	MULTI	TOTAL	SINGLE	MULTI	TOTAL	SINGLE	MULTI	TOTAL	SINGLE	MULTI	TOTAL
ALAMEDA COUNTY															
ALAMEDA UNINC.	393	118	511	506	1,017	1,523	247	153	400	342	330	672	258	144	402
ALAMEDA	143	4	147	127	274	401	42	82	124	233	4	237	331	4	335
ALBANY	18		18	12	30	42	1	103	104	3		3	1		1
DUBLIN			0		0	0			0			0	16	625	641
BERKELEY	21	102	123	12	135	147	10	85	95	5		5	21	15	36
EMERYVILLE		5	5		5	5			0	1	36	37	6		6
FREMONT	696	551	1,247	348	1,595	1,943	149	214	363	967	297	1,264	738	1,489	2,227
HAYWARD	248	425	673	148	821	969	35	302	337	82	326	408	27	118	145
LIVERMORE	185	128	313	114	427	541	192	39	231	505	136	641	177	2	179
NEWARK	49		49	502	551	1,053	162	153	315	133	204	337		286	286
OAKLAND	272	525	797	294	1,091	1,385	297	228	525	135	218	353	82	146	228
PIEDMONT	4		4	1	5	6	2		2	3		3	1		1
PLEASANTON	108	94	202	113	315	428	229	150	379	747	59	806	848	349	1,197
SAN LEANDRO	105	92	197	15	212	227	1		1	41	78	119	6	43	49
UNION CITY	501	16	517	167	684	851	79	6	85	488	1,998	2,486	347	296	643
TOTAL ALAMEDA COUNTY	2,743	2,060	4,803	2,359	7,162	9,521	1,446	1,515	2,961	3,685	3,686	7,371	2,859	3,517	6,376
CONTRA COSTA COUNTY															
CONTRA COSTA UNINC.	1,831	165	1,996	1,097	3,093	4,190	641	351	992	1,396	280	1,676	979	121	1,100
ANTIOCH	459		459	212	671	883	69		69	340	5	345	273	3	276
BRENTWOOD	48		48	51	99	150	4		4	10	3	13	33		33
CLAYTON	1		1	4	5	9	4		4	46		46	43		43
CONCORD	626	228	854	129	983	1,112	59	133	192	422	57	479	535	162	697
DANVILLE			0		0	0	12		12			0	81	8	89
EL CERRITO	40	2	42	10	52	62	1		1	15	19	34			0
HERCULES	49		49	3	52	55	83		83	366	268	634	190	24	214
LAFAYETTE	35		35	37	72	109	20	3	23	32		32	27		27
MARTINEZ	233	9	242	127	369	496	98	77	175	521	767	1,288	136	183	319
MORAGA	4	18	22	19	41	60	3		3	34		34	133		133
PINOLE	29		29	64	93	157	13	7	20	92		92	68		68
PITTSBURG	348	169	517	236	753	989	179		179	378		378	123	242	365
PLEASANTHILL	303		303	247	550	797	107	25	132	210	154	364	221	144	365
RICHMOND	252	54	306	108	414	522	17	158	175	126	214	340	89	211	300
SAN RAMON			0		0	0			0	79	40	119	93	372	465
SAN PABLO	169		169	129	298	427	207	57	264	140	52	192	9	26	35
WALNUT CREEK	139	209	348	50	398	448	56		56	237	103	340	187	165	352
TOTAL CONTRA COSTA COUNTY	4,566	854	5,420	2,523	7,943	10,466	1,573	811	2,384	4,444	1,962	6,406	3,220	1,661	4,881

Table 4

TOTALS 1980 - 1984

	%	MULTI	%	ALL UNITS	%
=====					
ALAMEDA COUNTY					
ALAMEDA UNINC	13.3%	1,762	9.8%	3,508	11.3%
ALAMEDA	6.7%	368	2.1%	1,244	4.0%
ALBANY	0.3%	133	0.7%	168	0.5%
DUBLIN	0.1%	625	3.5%	641	2.1%
BERKELEY	0.5%	337	1.9%	406	1.3%
EMERYVILLE	0.1%	46	0.3%	53	0.2%
FREMONT	22.1%	4,146	23.1%	7,044	22.7%
HAYWARD	4.1%	1,992	11.1%	2,532	8.2%
LIVERMORE	9.0%	732	4.1%	1,905	6.1%
NEWARK	6.5%	1,194	6.7%	2,040	6.6%
OAKLAND	8.2%	2,208	12.3%	3,268	10.6%
PIEDMONT	0.1%	5	.0%	16	0.1%
PLEASANTON	15.6%	967	5.4%	3,012	9.7%
SAN LEANDRO	1.3%	425	2.4%	593	1.9%
UNION CITY	12.1%	3,000	16.7%	4,582	14.8%

TOTAL ALAMEDA COUNTY	100.0%	17,940	100.0%	31,032	100.0%
CONTRA COSTA COUNTY					
CONTRA COSTA UNINC.	36.4%	4,010	30.3%	9,954	33.7%
ANTIOCH	8.3%	679	5.1%	2,032	6.9%
BRENTWOOD	0.9%	102	0.8%	248	0.8%
CLAYTON	0.6%	5	.0%	103	0.3%
CONCORD	10.8%	1,563	11.8%	3,334	11.3%
DANVILLE	0.6%	8	0.1%	101	0.3%
EL CERRITO	0.4%	73	0.6%	139	0.5%
MERCULES	4.2%	344	2.6%	1,035	3.5%
LAFAYETTE	0.9%	75	0.6%	226	0.8%
MARTINEZ	6.8%	1,405	10.6%	2,520	8.5%
MORAGA	1.2%	59	0.4%	252	0.9%
PINOLE	1.6%	100	0.8%	366	1.2%
PITTSBURG	7.7%	1,164	8.8%	2,428	8.2%
PLEASANTHILL	6.7%	873	6.6%	1,961	6.6%
RICHMOND	3.6%	1,051	7.9%	1,643	5.6%
SAN RAMON	1.1%	412	3.1%	584	2.0%
SAN PABLO	4.0%	433	3.3%	1,087	3.7%
WALNUT CREEK	4.1%	875	6.6%	1,544	5.2%

TOTAL CONTRA COSTA COUNTY	100.0%	13,231	100.0%	29,557	100.0%

SOURCE: CALIFORNIA BUILDING PERMITS, SECURITY PACIFIC BANK, 1980 - 1984

Housing at the Berkeley waterfront could be somewhat attractive in the secondary market area. Households who would ordinarily be attracted to Contra Costa County or San Francisco might consider the Berkeley waterfront under some conditions. There is a housing shortage in San Francisco which may be addressed with large developments in San Francisco, such as Mission Bay and Rincon Annex. Development of these projects would, however, inhibit capture from the San Francisco market. If these developments are not built, or come in at higher than expected prices, then the Berkeley site would be competitive.

Within Contra Costa County growth has been explosive the past decade, and has brought with it a set of attendant problems, including congestion and high land prices. More stringent land use controls in Central Contra Costa County could shift some demand to Northern Alameda County.

SUMMARY

Within the primary market area the effective market for new unsubsidized housing in the expected price range at the Berkeley waterfront, is approximately 6,000 units annually: 4,000 new owner occupied units and 2,000 market rate rentals. Most all of this market consists of existing households who, for one reason or another, will change residence in and around Alameda County, and some smaller number of newly formed households and households from outside the county.

The effective market, composed of those likely to move and able to buy, is relatively small in terms of the size of the county. Yet it is a substantial market. Many households move because of choice, but many have no choice and must take what the market has to offer. For example, a person moving into the market area because of employment reasons must take what the market offers, even though rents and prices may appear high. Because of market conditions, i.e. high interest rates, housing sales are somewhat sluggish. New rental housing continues to be built in high growth areas.

Based on the size of the potential market, it is reasonable to assume that a residential community of 2,000 or more units at the Berkeley waterfront would be feasible. This would require absorption of 133 to 150 units per year over a 15 to 20 year period, or three to five percent of the market. A well designed

residential community, assuming moderate interest rates, could be absorbed.

OFFICE SPACE

The market for new office space depends on the growth of the white collar labor force. Over the last several decades there has been a shift toward white collar, and away from traditional blue collar jobs. In 1960 white collar jobs accounted for only 43 percent of the labor force.⁷ By 1980 that had changed so that white collar workers account for more than half the labor force.

In addition to white collar there is a new emerging category of "grey" collar workers, who are technical and clerical, usually related in some form to computers, data and word processing. They are often categorized as service workers rather than white collar. However, they are relevant to this analysis since their primary working environment is office space rather than factory type space.

Traditional distinctions are further blurred by the high-tech industries. They require space which can accommodate traditional office and clerical functions, but also laboratory, and research functions as well. Some of the new developments in Silicon Valley are of multi-story buildings serving as headquarters, sales office, research center and limited warehousing and/or manufacturing.

The primary market area for office space is Alameda County. Employers seeking office space in Alameda County, especially in the northern part of the county, would have to seriously consider the Berkeley waterfront site. Employers inclined toward Western Contra Costa County, as for example the Hilltop Mall area, would also have to consider the site.

From a market standpoint the strength of the Berkeley waterfront site is its centrality to the East Bay and proximity to San Francisco. This would be especially attractive to region serving activities. For example, salesmen who have to cover the East Bay would find the site attractive. Professionals who live in the East Bay would also find it especially convenient.

The Berkeley waterfront site would attract some attention from employers primarily attracted to San Francisco, especially if Berkeley offered a significant price advantage. For example, downtown Oakland touts its price advantage (\$6.00 per square foot or more rent differential) over San Francisco in an effort to attract tenants.⁸ During the past decade many firms have moved

all or parts of their operations out of downtown San Francisco. San Francisco rents have risen too high to support some office functions such as bill collection, data processing and bookkeeping. Many firms that have moved all or parts of their operations have gone to Central Contra Costa County and Southern Alameda County. Pacific Bell and Chevron have been the most conspicuous examples of firms relocating parts of their operations to the suburbs while maintaining their executives in downtown San Francisco.

However, the Emeryville marina has also benefited from firms moving out of San Francisco, but not wanting to go all the way to Contra Costa. This is the same market being exploited by the developers of the Harbor Bay Isle development in Alameda. They are stressing their proximity to downtown San Francisco and their own unique amenities. The apparent marketing successes of Emeryville and Alameda suggest that this "almost in San Francisco" market exists.

DIMENSIONS OF THE MARKET

The dimensions of the market for office space at the Berkeley waterfront site would appear to be:

1. Firms who would otherwise seek office space in Alameda County or Western Contra Costa. The competition for this part of the market is downtown Oakland, the Oakland airport area, the business parks between Hayward and Fremont along Highway 17 and the Hilltop Mall area.

2. Firms who would prefer to be in San Francisco, but for reasons of economy would be satisfied to be close. The competition is the Emeryville marina, Harbor Bay Isle in Alameda, and any possible development in Albany.

3. Firms that want a non-central city location, but are less than satisfied with what is offered in the typical suburban office parks in Contra Costa and the Pleasanton area. The competition is the area around Hilltop Mall to the north, the Hacienda Business park area in southern Alameda County, the I-680 corridor and downtown Walnut Creek.

BACKGROUND AND PROJECTIONS

Population and employment growth in the primary market area has been accompanied by impressive growth in office space. This has been especially noticeable in downtown Oakland. Table 5 shows the inventory and growth of office space in the Greater Oakland area, which includes Emeryville, Alameda and Berkeley.

Downtown Oakland has absorbed an average of 165,000 square feet of new office space per year since 1960. However, during the 1980s the rate of building in downtown Oakland has increased sharply with the introduction of several major projects. For the first four years of the 1980s downtown Oakland has averaged more than 400,000 square feet per year.

The Oakland City Center project calls for a total of 2,000,000 square feet of office space. Currently three of a proposed 12 office buildings have been completed, with a fourth underway. Recently the Bechtel Corporation which was to have constructed two new buildings with 600,000 square feet have pulled out of the City Center Project. However, the Developers of City Center anticipate that the space will ultimately be built, although by a different entity.

The Trans Pacific Center, which was to have featured a 78 story building has been scaled back. Nonetheless, that project is proceeding with one new building (the headquarters of East Bay Municipal Utility District) due to start.

Development in the Emeryville Marina proceeds. The third of four possible large office buildings is under construction. Two major buildings with a total of 450,000 square feet of office space have been constructed since 1972. The plans for that marina area call for as much as 1,000,000 square feet of office space.

Harbor Bay Isle in Alameda has ambitious plans for office development. The latest plans call for a total of 7,000,000 square feet of office space. There are currently 700,000 square feet of office in the first phase of the development.⁹ November, 1984)

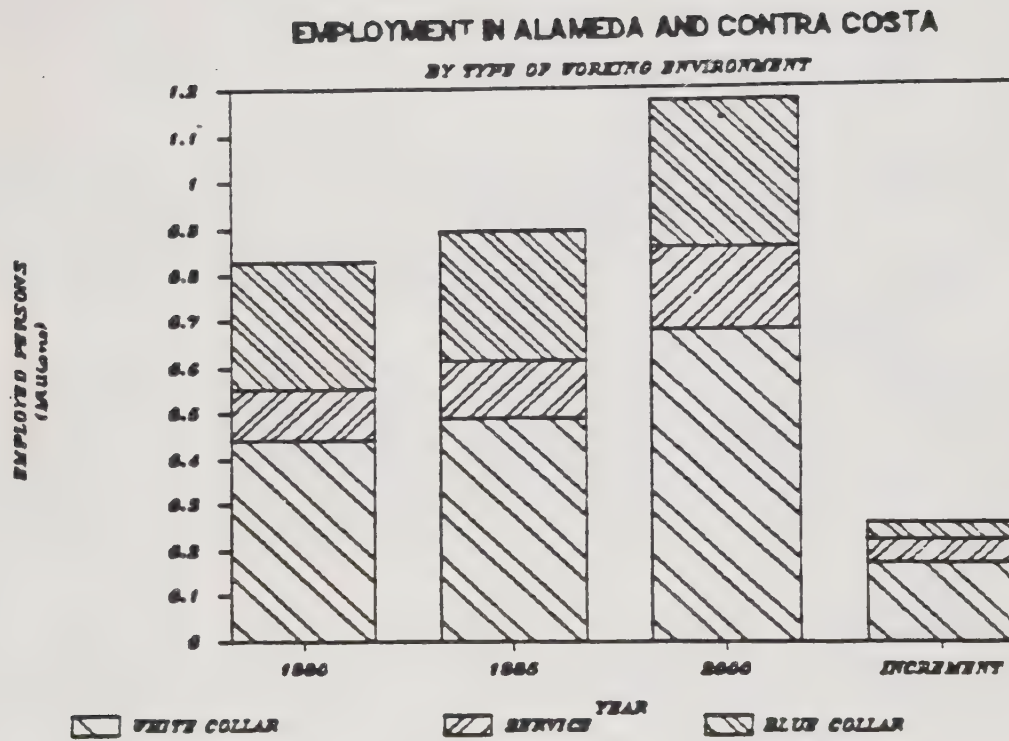
Within Alameda county the most intense office building activity has been in the Pleasanton area, which in the 1980s has accounted for as much new office space as downtown Oakland. The future plans are, however, much more ambitious. The Hacienda Business Park alone has plans for 8,000,000 square feet of office space.

TABLE 5
EAST BAY OFFICE SPACE INVENTORY BY PERIOD

	BEFORE 1950	1950 1959	1960 1969	1970 1979	1980 1984	TOTAL PROPOSED DEVELOPED	GRAND TOTAL
OAKLAND							
KAISER CENTER	526	1,187	945	613	380	3,651	
CITY CENTER	1,183	322		485	619	2,609	
AIRPORT			80	758	459	1,297	
OTHER	90		330	50	88	558	
TOTAL OAKLAND	1,799	1,509	1,355	1,906	1,546	8,115	4,150 12,265
BERKELEY	157	38	69	320	49	633	285 918
EMERYVILLE	95			285	225	605	368 973
ALAMEDA				104	44	148	7,000 7,146
TOTAL OUTSIDE OAKLAND	252	38	69	709	318	1,386	7,653 9,039
TOTAL GREATER OAKLAND AREA	2,051	1,547	1,424	2,615	1,864	9,501	11,803 21,304

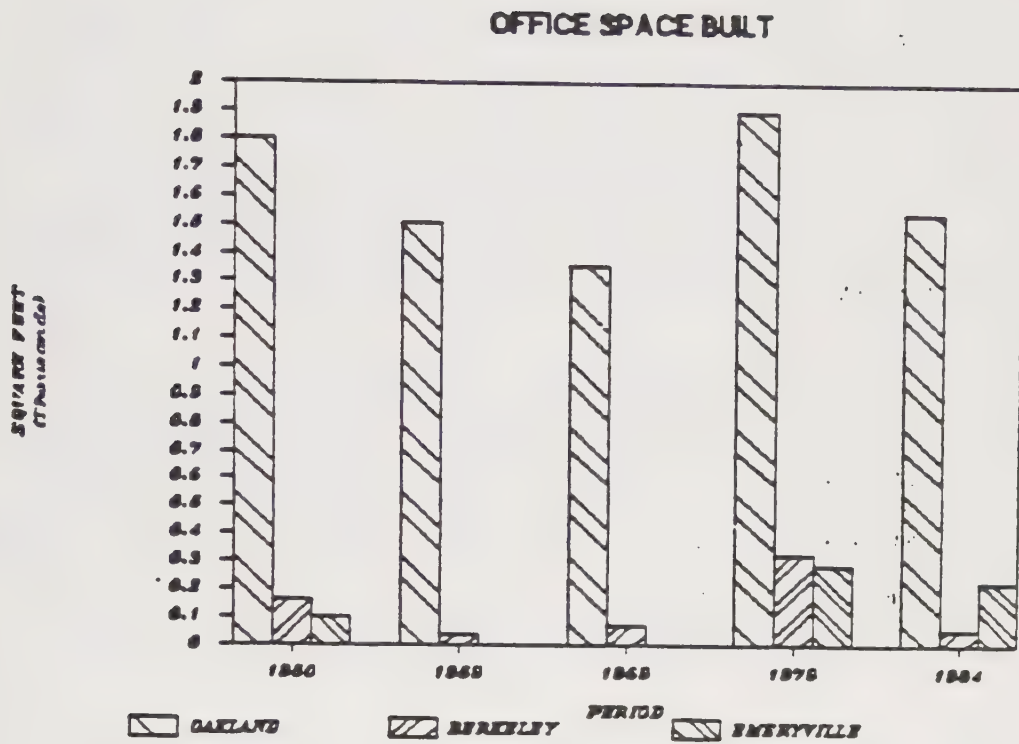
SOURCES: COLDWELL BANKER, GRUBB AND ELLIS, "BLACKS GUIDE TO OFFICE SPACE"

Figure 3



Source: Association of Bay Area Governments, Projections 1983

Figure 4



Within the East Bay, the Contra Costa- Southern Alameda market, along I-680, has grown dramatically. In addition to the massive Bishop Ranch and Hacienda Business Park developments, there are scores of other new office developments underway, or planned which call for an additional six million square feet of new office space.

MARKET FOR OFFICE SPACE

Between 1985 and 2000 the white collar labor force in the primary market area (Alameda County) will grow by 85,000 workers. As a rule of thumb each office worker requires 250 square feet of space. Using this standard the new space for the workforce alone would total 21,250,000 square feet. However, all of those new workers will not work in the county.

In addition to the primary market area, Contra Costa County will add an additional 75,000 office workers to the economy, requiring an additional 18,750,000 square feet. An important but as yet unknown factor is the development control imposed by the new Downtown Plan for San Francisco. The effects are now largely unknown, but it does open the possibility that some office growth which would have automatically gone to Downtown San Francisco may be diverted elsewhere.

The potential dimensions of the office space market are as follows:

80 percent of the Alameda county white collar labor force growth

35 percent of the Contra Costa County white collar labor force growth

The primary market for office space is 23,562,000 square feet of new space by the year 2000, or 1,570,800 square feet per year.

Accomplishing market absorption objectives for the waterfront of an ultimate 2,000,000 square feet of office space would require capture of 133,000 square feet for 15 years, which represents eight percent of the market. Three million square feet of office space, as called for in the Santa Fe alternative,

TABLE 6
DISTRIBUTION OF EAST BAY OFFICE SPACE
(000) SQUARE FEET OF SPACE

	PRE 1950	1950 1959	1960 1969	1970 1979	1980 1984	CURRENT	PROPOSED	GRAND TOTAL
OAKLAND	1,799	1,509	1,355	1,906	1,546	8,115	4,150	12,265
BERKELEY/EMERYVILLE/ ALAMEDA	252	38	69	709	318	1,386	8,000	9,386
TOTAL GREATER OAKLAND	2,051	1,547	1,424	2,615	1,864	9,501	12,150	21,651
HAYWARD/FREMONT		40	120	55	801	1,016	763	1,779
PLEASANTON					1,053	1,053	9,676	10,729
TOTAL REST OF ALAMEDA COUNTY	0	40	120	55	1,854	2,069	10,439	12,508
TOTAL ALAMEDA COUNTY	2,051	1,587	1,544	2,670	3,718	11,570	22,589	34,159
CONTRA COSTA								
WESTERN CONTRA COSTA					111	111		111
RICHMOND/EL SOBRANTE					162	162	427	589
MARTINEZ					273	273	427	700
TOTAL WEST CCC	0	0	0	0	273	273	427	700
CENTRAL CONTRA COSTA								
LAMORINDA				61	197	258	450	708
WALNUT CREEK			70	570	2,225	2,865	2,831	5,696
SAN RAMON				173	1,304	1,477	1,051	2,528
ALAMO/DANVILLE				530	973	1,503	1,520	3,023
CONCORD								
TOTAL CENTRAL CCC	0	0	70	1,334	4,699	6,103	5,852	11,955
TOTAL CONTRA COSTA COUNTY	0	0	70	1,334	4,972	6,376	6,279	12,655
TOTAL ALAMEDA AND CONTRA COS	0	1,587	1,614	4,004	8,690	17,946	28,868	46,814

TABLE 7
TYPICAL OFFICE SPACE RENTS
NEW BUILDINGS OLD BUILDINGS

DOWNTOWN SAN FRANCISCO	\$3.00	\$2.00
DOWNTOWN OAKLAND	2.00	1.25
OAKLAND AIRPORT	1.40	1.00
BERKELEY	1.65	1.25
EMERYVILLE	2.00	
HAYWARD/FREMONT	1.70	1.10
PLEASANTON	1.45	
CONCORD	1.60	1.00
WALNUT CREEK	2.00	

SOURCE: INFORMAL SURVEYS OF SOME "TYPICAL" BUILDINGS

would require an absorption of ten percent of the market for office space over the 15 year period, and correspondingly less over a longer period of, say 20 years.

As a measure of reference, the Cutter Tower office building on the Emeryville Marina has 225,000 square feet. Although no high rise buildings are contemplated for the Berkeley waterfront, the absorption assumed in the Santa Fe plan would call for the equivalent of one Cutter Tower office building per year for 15 years.

CAN IT ALL BE ABSORBED?

It is the general consensus among real estate professionals that at the beginning of 1985 that downtown Oakland is significantly overbuilt. There is currently a glut of office space now coming on the market which cannot be quickly absorbed.

There is a similar, though much larger, situation in downtown San Francisco. There the same kind of overbuilding has occurred. The consequence has been that office rents have leveled off or even lowered by way of excessive landlord concessions.

To put these situations in perspective, it must be remembered that office building historically has occurred in waves of development. Developers build as long as lenders lend. When the overbuilding becomes evident to the lenders the building wave ceases. During the ensuing months or years, the space is gradually absorbed into the market.

All the office space built eventually is absorbed by the market. If the absorption takes longer than expected, there may be casualties among the developers. Nevertheless, the space is eventually absorbed.

The market in the Bay Area, and in the East Bay in particular, is quite strong in terms of future growth. In the opinion of knowledgeable real estate professionals the current downtown Oakland overhang of office space is temporary. It will all be absorbed in the market in time, although not as fast as their developers wish.

There are several gigantic projects on the drawing boards. Can they all be absorbed in this market? for example consider the following proposed developments:

Directly Competitive

Harbor Bay Isle	7	million sq. ft.
Santa Fe (Berkeley)	3	"
Downtown Oakland	3	"
Hilltop	2	"

Other Developments

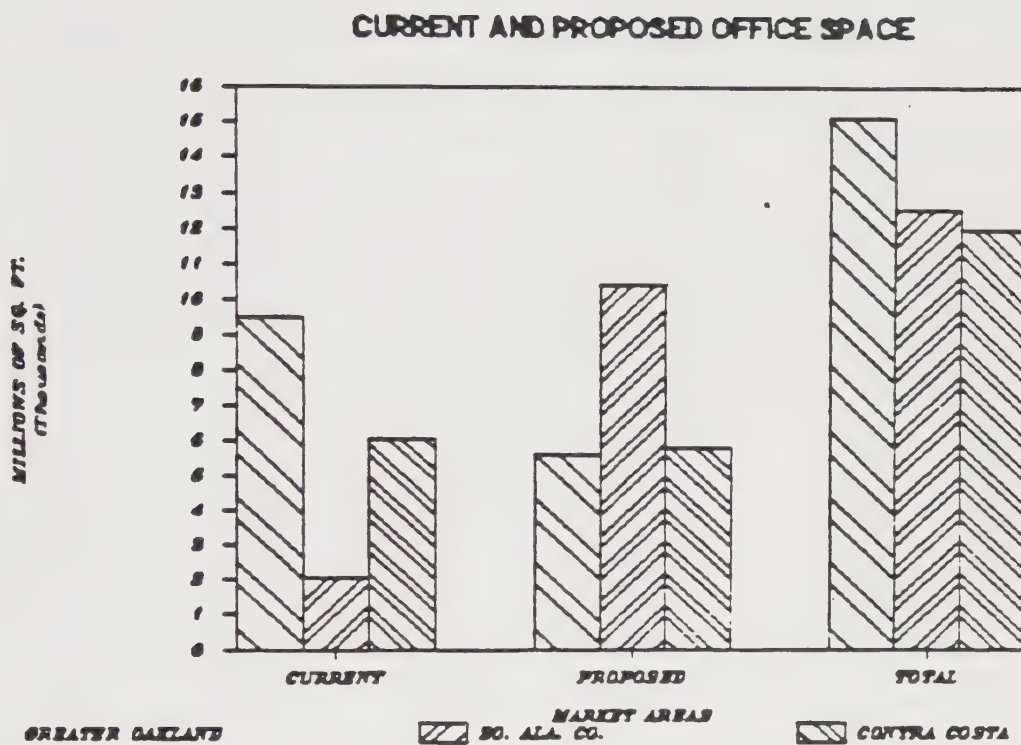
Hacienda Business Park	8	"
Bishop Ranch	4	"
Mission Bay	4	"

There is no way of knowing whether or not all the announced developments will ever be built as planned. The most that can be said now is that the potential market is large, based on anticipated growth of employment and population in the region. For the developers there appear to be reasonable prospects that much of the announced development can be absorbed, at least over the next two decades.

These large projects which have been announced are sponsored by some of the most experienced and wealthy land developers (Aetna, Prudential, Santa Fe, Bass Brothers, Chevron), that possess resources and staying power.

In terms of the relative attractiveness among the sites listed above, the Berkeley waterfront would rate at or near the top, considering access and amenities. Therefore, it would seem reasonable that under adverse market conditions some of the other announced projects would falter before the Berkeley waterfront.

Figure 5



OFFICE SPACE IN DOWNTOWN BERKELEY

At yearend 1984 downtown Berkeley had the following inventory of major office buildings:

Table 8
Major Office Buildings In Berkeley

Name	Date Built	Address	Size	Rent	Percent Leased
Great Western	1970	2150 Shattuck	135,735	\$1.45	96%
ETS	1947	1947 Center	102,283	1.67	100%
2850 Telegraph	1971	2850 Telegraph	70,087	1.08	100%
2855 Telegraph	1961	2855 Telegraph	69,350	n.a.	100%
Wells Fargo	1928	2140 Shattuck	55,256	1.20	100%
Berkeley Tower	1983	2120 University	49,000	n.a.	100%
Tioga	1956	2020 Milvia	38,000	1.50	100%
Berkeley Center	1970	2000 Center	37,725	1.35	98%
2330 Addison	1985	2030 Addison	38,000	1.85	33%
Milvia Center	1984	2145 Milvia	32,000	n.a.	100%
Total			627,436		

Source: Robert P. Marshall, "Oakland Area Over-All: An Office Building Study of the Greater Oakland Area, January 1984"

As can be seen in the above table, the Berkeley office space market is robust. Occupancy in major buildings (not under construction) are almost fully leased. This compares extremely well with downtown Oakland, for example, where there are substantial vacancies. However, Berkeley differs from downtown Oakland since there has not been a comparable level of new

construction. Yet the existing Berkeley office inventory is very much in demand.

The waterfront site and Downtown Berkeley exist in the same market area and are, therefore, competitive. However, each site has unique attributes which are potentially attractive to office space developers.

Downtown Berkeley has better access to mass transit than the waterfront. The BART station is directly downtown, thus offering more opportunities for commuting than on the waterfront. On the other hand, the waterfront site is more convenient to auto access and is closer in terms of driving time to other activity centers in the region.

HOTEL/MOTEL MARKET

One of the proposed uses for parts of the waterfront site is for hotel and related facilities such as a conference center. The site currently contains one motel, the Berkeley Marina Marriott which is on city owned land.

The market for hotel rooms and related service has several dimensions. Hotel occupancy is derived from the following: vacationing travelers, business travelers, and conference participants.

Vacationing Travelers

These travelers usually have San Francisco as their ultimate destination or focal point, although there are some attractions in the East Bay. Because of the seasonality of this market, there are times when most of the first class hotel space in San Francisco is completely booked, and some spillover accrues to the East Bay.

Business Travelers

As the premier business center in the metropolitan area, San Francisco obtains the largest portion of business travelers. The hotels in downtown San Francisco cater quite well to this market. Those who have business in downtown San Francisco will prefer to stay downtown.

However, downtown is not the only location of business concentrations. As businesses have proliferated in the suburban industrial parks, there has been considerable hotel and motel construction in the suburbs. The primary beneficiaries have been areas around major airports. For example, the number of motel rooms adjacent to San Francisco Airport has doubled in the last 5 years. Today there are more than 5,000 airport area hotel/motel rooms. The same has happened at the San Jose and Oakland airports although to a lesser degree.

An example of the business induced hotel development is seen around Silicon Valley. In 1973 there were only 2,002 hotel/motel rooms in San Jose, Santa Clara and Sunnyvale combined. In 1984

TABLE 9
HOTEL/MOTEL ROOM INVENTORY

	ROOMS	LOW	HIGH
=====			
BERKELEY			
BERKELEY MARINA MARRIOTT	242	\$74	\$90
BEST WESTERN BERKELEY HOUSE	140	45	51
BEST WESTERN GOLDEN BEAR	42	31	33
SHATTUCK HOTEL	170	40	50
HOTEL DURANT	140	45	55
CLAREMONT HOTEL	263	87	132
TOTAL BERKELEY	997		
OAKLAND			
HYATT REGENCY	488	73	83
BOATEL	70	62	72
JACK LONDON	150	43	49
LONDON LODGE	150	36	42
THUNDERBIRD MOTOR LODGE	102	48	58
HOLIDAY INN EMERYVILLE	278	55	75
HOLIDAY INN - AIRPORT	196	51	60
HYATT - AIRPORT	350	52	62
HILTON - AIRPORT	367	68	94
PIER 8	100	37	41
TOTAL OAKLAND	2251		
HAYWARD/FREMONT			
JACKSON PARK	20	32	40
MOTEL ORLEANS	70	42	48
PLAZA INTERNATIONAL	60	49	51
VAGABOND INN	100	50	55
THUNDERBIRD	127	50	54
NEWARK HILTON	224	n.a.	
FREMONT FRONTIER	41	29	24
TOTAL HAYWORD/FREMONT	642		
CONCORD/WALNUT CREEK			
CONCORD INN	123	52	67
CONCOCRD HILTON	330	70	75
CONCORD MOTEL	63	30	36
EASY 8	136	n.a.	
HOLIDAY INN CONCORD	132	65	70
THE TREES	42	n.a.	
SHERATON HOTEL AND CONFERENCE CENTER	331	63	87
WALNUT CREEK INN	74	45	54
WALNUT CREEK MOTOR LODGE	72	45	47
TOTAL CONCORD/WALNUT CREEK	1303		
TOTAL HOTEL/MOTEL ROOMS IN MARKET AREA	5193		

that had more than doubled to 5,435 rooms. The demand reflects the extraordinary growth in Silicon Valley, and the attendant business activity.

Overall, the decade from 1974 to 1984 saw a doubling of the number of hotel/motel rooms outside San Francisco.

Conference Attendance

Conferences and conventions are significant sources of hotel room demand. In San Francisco, for example, one third percent of hotel demand is from conventions and conferences.¹⁰ Some large organizations, such as the AMA, Realtors, and ABA, can only be accommodated in a few cities nationwide. San Francisco is one of the hand full of cities with the full range of amenities that such organizations seek. When some of the largest organizations hold their conventions in San Francisco there is often a spillover to adjacent communities.

In addition to the large conventions, many local organizations or state or regional chapters of the largest organizations hold smaller meetings and conferences. Conference centers other than San Francisco have an opportunity to compete for this business. For example, the Oakland Convention center, and the one in Concord, host regional and state conferences which are smaller in scale than their national counterparts. Oakland reports approximately 200 convention or conferences hosted during 1984.

In the East Bay the primary focus for conferences are the activities surrounding the University of California and its associated centers and offspring. However, facilities in the East Bay are not particularly well suited for this function.

There are few facilities in the East Bay able to fully exploit the opportunities offered by the University related activities. The Claremont Hotel has some facilities, as does the Oakland Convention Center, although Oakland is some distance away from the source. The Berkeley waterfront site has the potential to exploit the proximity to the university for conference and meeting type facilities.

BUSINESS INDUCED DEMAND

As business continues to grow in the East Bay, there will be corresponding demand for hotel facilities geared to business travel. In the East Bay employment will grow by 20 percent by the year 2000. Much of the employment growth will be within one half hour's drive of the Berkeley waterfront site, making hotel accommodations there accessible.

Most business travelers travel by air. The increase in air traffic is indicative of the increase in general business activity.¹¹ This is one reason for the increase in hotel rooms at the airports, as they are in a sense the most directly accessible sites for business travelers. In the East Bay the Oakland Airport is increasingly more popular, for both business travelers and tourists. Passengers landing in the East Bay will be more prone to stay at an East Bay motel.

EAST BAY INVENTORY

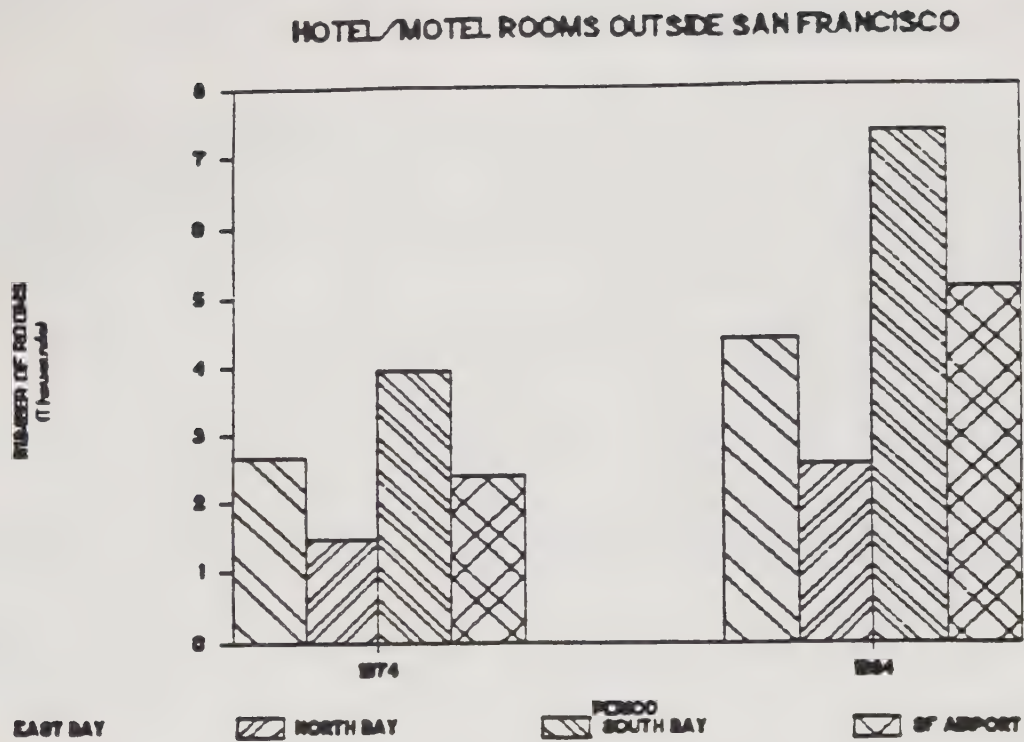
In 1984 there were 3,890 hotel rooms in the East Bay, and an additional 1,303 rooms in Contra Costa County. This can be compared with approximately 7,000 rooms in Silicon Valley, 5,000 rooms at San Francisco airport, and 16,000 rooms in San Francisco.

San Francisco has seen the introduction of several new hotels in the past five years, and there are other large hotel plans in the development pipeline. The downtown San Francisco market is now saturated. It may take another five years for the hotel situation in San Francisco to get back to normal. One practical effect of the hotel glut on the East Bay is that it

lessens the spillover demand which periodically benefits the East Bay establishments.

Plans of the Marina include the Santa Fe alternative for 1,500 hotel rooms. This exceeds the current Berkeley inventory, and is equal to half the total now existing in Oakland. However, the present hotel room inventory is inadequate

Figure 6



HOTEL ROOM INVENTORY OUTSIDE SAN FRANCISCO

	1974	1984
EAST BAY	2,653	4,392
NORTH BAY	1,498	2,578
SOUTH BAY	3,923	7,362
SAN FRANCISCO AIRPORT	2,401	5,117
TOTAL OUTSIDE SAN FRANCISCO	10,475	19,449

SOURCES: AAA TOUR GUIDES 1973 TO 1984, SAN FRANCISCO AND OAKLAND CONVENTION BUREAUS

considering growth in the East Bay over then next two decades. There is no specific or normal ratio of hotel rooms to population or business activity, but as a general proposition, increases in either or both do generate demand for additional hotel space. Silicon Valley, where hotel space has doubled in the last decade, is an example.

Over the ten year period 1974 to 1984 the number of hotel/motel rooms outside of San Francisco increased almost doubled. If the demand were to remain constant, then the demand for new hotel space outside San Francisco would amount to 900 new rooms per year. Allocating one quarter of this market to the East Bay produces a market share, potentially available to the waterfront site, in the neighborhood of 225 rooms per year.

Successful absorption of 1,000 hotel rooms beginning after 1885 would require absorption of 70 rooms per year on average, out of an East Bay market of approximately 225 rooms.

Currently there are plans for an additional 700 rooms in the immediate environs of the site: 150 rooms in the new Days Inn in Emeryville, expansion of the Berkeley Marina Marriott, a new 250 room hotel in Berkeley and expansion of the Emeryville Holiday Inn. This will handle the demand in the area for the next four to five years. For this reason the relevant time period for hotel development at the waterfront site is beginning around 1990 rather than 1985.

Given the extent of the market, there is certainly enough potential for two hotels of 300 to 400 rooms during the period 1990 to 2000. A third hotel might be viable after then, depending on the success of the first increments and their marketing. Given the attractiveness and accessibility of the Berkeley Waterfront site, it would appear that hotel usage is appropriate and warranted by the market.

A CONFERENCE CENTER

There is no uniformity in conference centers. However, there are two primary types of conference centers. One kind is the very large center which caters to conventions, conferences, trade shows and exhibitions. Moscone Center is an example. These are all very large facilities on the order of at least 300,000 square feet, going up to one million square feet. They cater to the large trade shows and conventions where space is a premium.

These facilities are usually publicly owned and financed. They are looked upon as economic development facilities for the respective cities. The benefits are the spin-off jobs and sales generated.

The other kind of prevalent facility is a smaller conference center which lacks the immense exhibition areas. A likely configuration consists of: 30,000 to 50,000 square feet of exhibit space, an auditorium seating from 200 to 1,000, 5,000 square feet of meeting rooms, lobby and registration space, and parking. Total size is on the nature of 50,000 to 70,000 square feet. The convention centers in Sacramento, Fresno and Monterey are on this scale.

These smaller centers cater to regional and local conventions, or specialized meetings where size is not an issue. Some of these facilities are publicly owned, some privately financed and some built with public/private cooperation. The Sacramento and Monterey facilities are community owned, and serve a variety of purposes.

Small scale conference facilities can be privately owned, as is true with some hotels. For example, the Town and Country Motel in San Jose has approximately 150,000 square feet of meeting and exhibition space. There is a symbiotic relationship between hotels and conference centers. The presense of a conference center stimulates hotel occupancy (and demand for hotel rooms). On the other hand, the presense of hotel rooms enhances the success of a conference center.

There has been a proliferation of conference and exhibition space. Most the major cities, have recently built, or are expanding their convention facilities. The smaller communities are building their own facilities. The Urban Development Action Grant (UDAG) Program has in part financed many of them, as was the case of Oakland.

There appears to be a market for a small scale conference and exhibition center at the site, on the scale of 50,000 to 70,000 square feet. A model is the conference center in Monterey. The market consists of education related and business related events. The University of California, its associated centers and affiliates, and other colleges in the area are a prime market. Businesses in the area, from Hayward to Richmond, are another target. There is a shortage of first class conference facilities in the area. The Oakland Convention Center cannot meet the entire East Bay need for such facilities. 12

An additional market factor, is that Berkeley is a prestige location for conferences and conventions. The ambience of a

waterfront site would further enhance this factor.

SPECIALTY RETAIL

The site presents an opportunity for specialty retail services. This analysis is restricted to specialty retail, rather than general retail because of Berkeley's policy not to consider the waterfront site for a shopping center.

Specialty retail has two distinct markets: internal and external. The internal market consists of the employees, residents and other users of the site, who would under normal conditions patronize their immediate environs for convenience shopping and meals at the workplace. This is in a sense a captive market for certain kinds of goods and services.

The external market consists of those potential patrons in the trade area who are attracted to the shopping, eating and recreation establishments that could be located at the site. For this market the facilities are in general competition with the other like facilities in the East Bay.

THE INTERNAL MARKET

If the site were developed primarily as an office environment, it would have an associated set of retail and service demands emanating from the need to service the daytime population. A primary component would be food establishments, to meet the lunch time, and other daytime nutrition needs. Other kinds of establishments would be some convenience shopping, such as drug stores or pharmacies, beauty and barber shops, tobacco shops, book stores, special clothing, liquor, and other specialty shops.

In addition to the goods and services aimed toward the employees, there is another set of space requirements aimed at the businesses themselves, such as stationery stores and quick printing. There are also in between establishments which cater to both businesses and their employees, such as travel agents, camera and photographic shops and notions shops.

The internal market for goods and services is finite, depending

on the aggregate purchasing power represented by the daytime population. The average person spends approximately the following percentages of income on:

Food away from home	4.11%
Clothing and related services	8.40
Alcohol, tobacco, etc.	1.5
Personal care	2.23

The internal market is constrained by the above propensities. Examining the above list indicates that at best the on site establishments could expect to capture perhaps: one quarter of the food away from home, one tenth of the clothing expenditures, and one quarter of the other categories. Thus the on site establishments could realistically anticipate capturing around two percent of the income of employees.

Consider an increment of 100,000 square feet of office space, which would house approximately 400 employees. At an average salary of \$20,000 per employee the total income available is \$8,000,000. The capture would be on the order of two percent, or \$160,000. Translating that sum into square feet of retail space, at \$150 per square foot of sales, provides a demand for 1,066 square feet of retail space. Making some allowance for business induced demand, as distinct from employee induced demand, that might double the amount. In any event the internal demand for associated retail and service space is on the magnitude of two percent of the office space.

For one million square feet of office space, the internally generated demand for associated retail and service space is on the order of 20,000 square feet.

For certain kinds of retailing, the external market can complement the internal market. For example, a restaurant which serves the lunchtime needs of employees in the area, might also serve dinner to a different clientele. The ability to generate revenue from both markets may be essential to the business' survival.

RESIDENTIAL

If the site were to have a substantial residential component, this would also generate demand for retail space to accommodate the residents. There would be demand for convenience shopping and some services.

A residential development of 1,000 housing units would generate demand for a small convenience goods shopping center of approximately 15,000 square feet. Approximately 80 percent of the space would be required for a supermarket, and the remainder for a drug store or pharmacy, and several specialty stores.

The residential community could serve as a magnet for other activities, such as restaurants, specialty retail stores, and personal care establishments. Patrons would be attracted from other points in the trade area to quality establishments there.

Here again, the residential component of development would generate a demand of from one to two percent of the amount of residential space for use as retail and commercial which services the immediate residents.

EXTERNAL DEMAND

Specialty retail centers are difficult to sustain. Since there is no magnet tenant, such as a major department store, and usually not even a large supermarket, there is no reason for shoppers to regularly visit the center. Without a recurring reason to go there, the specialty centers can fall out of favor. Therefore, the difficulty is in establishing some strong reason for shoppers to visit the area even though it lacks a magnet store. The specialty center needs a theme or special ambience that a major shopping center does not. Using the waterfront as a motif could be the unifying theme for specialty retail at the site.

There is a hole in the retail market fabric in the area between Hayward and Richmond. The waterfront site just happens to be in the middle of this void. The void has not been filled in either Oakland or Downtown Berkeley. Thus the market area between Hayward and Richmond remains underserved, and is likely to remain that way.

Specialty retail at the Berkeley waterfront site would be an

attractive option for many kinds of up-scale shops. Clothing, gourmet foods, personal items, art objects, and other kinds of shops at the site would be well positioned in the market.

Berkeley itself has attracted many specialty shops, as evidenced by the apparent successes of the Elmwood area, Solano Avenue, and Walnut Square, to name a few such places. Although commercially successful, they are not viewed as unrestrained blessings by many residents. Accompanying them have been congestion, high rents, and evictions of old time familiar stores.

The waterfront represents an alternative site for much of the specialty retail demand. Development at the waterfront may take some of the pressure off the neighborhoods which feel they have enough restaurants, boutiques and gourmet shops.

ANALOGOUS DEVELOPMENTS

The specialty retail subject is best analyzed by analogy, or studying comparable developments, rather than market statistics, especially in the case of the Berkeley site.

Relatively close-by are two specialty retail developments analogous to the kinds of possible specialty retail development at the Berkeley Waterfront: Jack London Square in Oakland, and Larkspur Landing in Larkspur.

Jack London Square currently has restaurants, offices and some retail stores. The Port of Oakland has ambitious plans for the area including a new hotel, office buildings and refurbishing the existing retail. Jack London Village, a specialty complex of shops and restaurants, has not had the success envisaged for it. Nevertheless, it is a kind of model of the variety of activities which can be brought to a waterfront setting.

Jack London Village is a 65,000 square foot complex containing space for 60 shops developed in 1975. The anchor tenant is Shenanigans Restaurant, a large complex of 15,000 square feet. There are a variety of gift, clothing, novelty and food related enterprises. It draws its patronage from the Oakland/Alameda area during the week, and some tourists on the weekends. The neighboring residential development, Portobello, was never developed as initially planned. In addition, the adjacent Port of Oakland land remains vacant, awaiting potential development of

a hotel and office complex. Jack London Village would do better if the adjacent commercial and residential development ever materializes. Currently it is only 65 percent occupied, but its occupancy has been as high as 95 percent. ¹³

The Larkspur Landing is all new development (since 1980). It was built on 16 acres adjacent to the Larkspur Ferry Terminal. There is a large condominium development (300 current units and 300 more proposed) behind the shopping center. The center contains 175,000 square feet of specialty shopping and restaurants. It is oriented to the water and stresses its proximity to the Larkspur Ferry Terminal.

Management acknowledges that maintaining the center has been difficult. The greatest shortcoming is the lack of a major anchor tenant. Even with an attractive location near the water, and well designed buildings, that has not been enough to keep the center fully patronized and occupied.

SUMMARY

The internal market for goods and services on the waterfront site is constrained. It is approximately two percent of the office and/or residential space. For example, 1,000,000 square feet of office space would generate a demand for 20,000 square feet of commercial and retail space patronized by employees. Similarly, a 1,000 unit residential development (of approximately 1,000,000 square feet) would support a small convenience shopping center. As an example, the Emeryville marina has 1,200 condominium units and its own small shopping center.

Retail and commercial space in excess of two percent of the total development will have to look to external markets. The Berkeley waterfront site is located in a void in the area's retail fabric, offering an opportunity to develop specialty retail there. However, successful specialty retail development requires a special theme or ambience. The special amenities of the site offer such an opportunity.

-
1. Metropolitan Transportation Commission, Journey to Work, 1984
 2. The attraction of the site falls off in southern Alameda County, around Fremont. However, that tends to be balanced by Western Contra Costa County, in the Richmond/ Pinole area. The secondary market area consists of Contra Costa County and San Francisco.
 3. The best comparable for new housing in the market area is the Harbor Bay Isle development in Alameda. It is a good quality development built on filled land on the waterfront. Its units, both condominiums and single family houses are selling for approximately \$100 per square foot. A 1,300 square foot condominium sells for \$140,000 and their top of the line 2,600 square foot single family home model sell for \$260,000.
 4. See the table in the Appendix which provides data on movers.
 5. The primary source for this and other population estimates is the Association of Bay Area Government's Projections 1983.
 6. Conversations with persons at Lincoln Properties in Foster City confirms this masrket. Lincoln Properties will bring 1,700 new rental units onto the market during 1985.
 7. U. S. Department of Labor, County Business Patterns
 8. Grubb and Ellis Commercial Real Estate, Real Estate '85: Alameda-Contra Costa Counties.
 9. Harbor Bay Isle Draft Environmental Impact Statement, prepared by Environmental Sciences Associates (ESA)
 10. San Francisco visitors and Convention Bureau
 11. Airport traffic for both San Francisco and Oakland has been increasing about 4 percent per annum
 12. Much of this information was obtained from interviews with persons with working experience in the convention management and hotel management business
 13. Information gathered with interviews with the management.

FISCAL SETTING

The purpose of this section is to provide background information on the fiscal consequences of alternative plans.

Development of the Berkeley waterfront will have definite fiscal implications for the City, and other governmental service districts. There will be costs associated with serving the site, and revenues will be generated from a variety of taxes, fees and charges.

COSTS ASSOCIATED WITH DEVELOPMENT

Because Berkeley is a mature city with its basic infrastructure in place, and established procedures for delivering services, the fiscal analysis is most appropriately handled on a case by case basis. Specific plans will be analyzed as they are presented, and at which time the appropriate city departments will comment on them. The city's staff prefers to see specific plans or proposals rather than rely on thumb rules or standard measures.

Therefore, the purpose of this section is to identify the various departments which may be affected by development, and indicate the manner by which it would be effected. The City of Berkeley's 1984-1985 Budget was the primary source of information on fiscal consequences of development. It should be kept in mind that the scale and uniqueness of the waterfront site may make some comparisons with existing budget ratios and service standards inappropriate. Nevertheless, the current experience is the starting point until there is information to the contrary. The following section is based on analyses of the likely effects on the City's budgeted activities using information from the budget documents.

General Administrative

The city currently devotes some general administrative time to the waterfront, but it is not accounted for separately. It is

possible that development could lead to increased administrative time for contract compliance, legal, planning and inspections.

The increment for general administration cannot be estimated until plans or programs are offered. However, the cost of an additional person year in, for example, planning, would cost the city approximately \$61,000 (including all overhead and fringe benefits.)

Public Safety

The site is currently afforded police and fire protection since there are currently activities on the site, i.e. the restaurants, office building, hotel and the marina. In addition the businesses have private security guards, and the marina a voluntary patrol.

Police protection is provided 24 hours a day from two beats that serve the areas around San Pablo Avenue. Development of the site, including development of parkland, may necessitate an eventual reallocation of duties among the city's 16 beats, and even the creation of an additional beat. When and how this might be accomplished would depend on the timing, nature and intensity of the development.

Should a new patrol beat be required, it would entail four patrolmen for 24 hour service. Keeping four positions fully occupied would require six persons.

Fire protection is afforded the site from facilities east of the freeway. It is possible that development would eventually require a facility west of the freeway. However, that would depend on several factors, including the nature of the development and its intensity.

According to the city budget documents, a public safety officer's approximate cost, fully loaded with overhead, equipment, fringe benefits and pension vesting, is \$65,000 per year.

Environmental

Development of the site would entail environmental expenses for maintenance. It is assumed that the capital costs for infrastructure would be assumed by the appropriate private (or other governmental entity) developers.

Additional streets and sidewalks would have to be swept and maintained, along with traffic signals and street lights. Sanitary and storm sewers would have to be maintained. Lawns would have to be mowed and otherwise maintained, and trees and hedges would have to be trimmed. Refuse would have to be hauled away.

There are no set unit costs used by the city for most of these maintenance functions. Each project is evaluated separately. The city has 212.6 acres of parks and recreation facilities, and a staff of 3.15 for maintenance of park structures, 16.08 persons as foresters (maintaining trees and hedges), and a landscape staff of 36.08 persons. Development of open space would entail some additional time of these persons. However, there is no direct analogy to their current disposition and what may be developed on the waterfront. Therefore, a proper accounting for costs would require a case study of each proposal.

The City of Sunnyvale, for example, has an extensive recreation and open space program and has kept detailed costs of creating and maintaining parks and open space. Sunnyvale's costs for maintenance of parks is approximately \$10,000 per acre for formal neighborhood parks, and \$6,000 per acre for less formal open space. The \$10,000 per acre represents a high level of maintenance including mowing, weed control, repair and maintenance of restrooms and other structures. The \$6,000 per acre figure represents less maintenance, but includes weed control and pruning costs. ¹

There is a range of likely costs for environmental services depending on the kind of public and open spaces involved. However, an additional person year of a public works employee would cost approximately \$58,000, fully loaded with overhead, equipment and fringe benefits.

REVENUES

Principal revenues from development consist of: (1) property taxes, (2) business license fees, (3) sales taxes, (4) occupancy taxes on hotel rooms and (5) the new utility users tax.

PROPERTY TAXES

The property tax is set by law at one percent of market value, and is collected by the county. Berkeley's share of the tax is roughly 43 percent of that collected by the county. The Berkeley school district also collects approximately 25 percent of the county tax, which is in addition to the amount going to support Berkeley city services.

In addition, Berkeley levies special assessments and fees on property owners which increase the effective rate by almost half. ²

Berkeley share of county tax	.0043
Special add-ons	.0016
Special assessments	.00079
Total effective tax rate	.00669

Any real property developed in Berkeley would anticipate paying the effective rate of .00669 to the City of Berkeley, in addition to the balance of the County tax.

SALES TAX

Berkeley receives a subvention of one cent of the State's 6.5 percent sales tax for all retail sales in its jurisdiction.

BUSINESS LICENSE FEE

Berkeley charges a business license fee, which varies with the kind of business. The fee is \$1.42 for each \$1,000 of wholesale sales, up to \$2.82 for each \$1,000 of revenue from professionals.

HOTEL OCCUPANCY

Berkeley collects ten percent of the daily hotel room rate in the form of an occupancy tax.

UTILITY TAX

The city collects a tax equivalent to three percent of utility charges.

REVENUE FROM DEVELOPMENT

OFFICE SPACE

Office buildings yield two direct sources of revenue: property taxes and business license fees. An increment of 1,000 square feet of office space, with a cost including land of \$150 per square foot, would be valued by the County Assessor at \$150,000. At Berkeley's effective tax rate, the property would yield approximately \$670 per year in tax revenue.

The 1,000 square feet of office space would house on average 4 employees, who would in turn account for approximately \$240 in business license fees.

The tax collected from office development would, of course, depend on the market value set by the County Assessor. Based on the quality of construction likely to be utilized on the waterfront site, and appropriate allowance for land values, the likely range of tax revenues to the City would be from a low of \$800 to a high of \$1,000 per 1,000 square feet of office space constructed.

RESIDENTIAL

Property taxes would be the sole source of direct revenue from residential developments. A 1,000 square foot dwelling unit would yield from \$500 to \$900 per year in property taxes depending on the assessed value, which in turn depend on the size of the unit and amenities.

RETAIL AND COMMERCIAL

Retail and commercial uses such as restaurants provide three sources of revenue: property taxes, business license fees, and sales taxes.

A 1,000 square foot store, for example, with annual sales of \$150 per square foot would have revenue of \$150,000, and provide Berkeley with \$1,500 in tax revenues. Business license fees would be in the neighborhood of \$200. Property taxes would amount to an additional \$670. Total tax revenues received would amount to approximately \$2,370

HOTEL ROOMS

Hotel rooms provide four sources of revenue: property taxes, business license fees, sales taxes and occupancy taxes. A 1,000 square foot increment of hotel space would contain approximately 2 rooms. Assuming a 70 percent occupancy rate, at \$80 per day, the hotel would produce approximately \$4,088 per year in occupancy taxes. If the average guest spent an additional \$25 at the hotel on meals or sundries, this would produce \$128 in sales taxes.

The hotel increment (1,000 square feet) would produce \$670 in property taxes and \$40 in business license fees, for a total of \$4,926 for the year.

UTILITY TAX

The estimated cost of utilities for commercial and residential uses is approximately \$1.50 per square foot of space per year. Thus, an office of 1,000 square feet, for example, would generate a utility bill of \$1,500 per year. The utility tax would amount to \$45.

SUMMARY OF REVENUES

A 1,000 square foot increment of development with an in place value of \$150,000 (including land value) would generate the following revenues:

Table 11
Revenues Generated from 1,000 Square Feet
of Development

	Property Tax	Sales Tax	Business Licence	Occupancy Tax	Utility Tax	Total
Residential	\$ 670				\$45	\$715
Office	670		240		45	955
Retail	670	1,500	200		45	2,415
Hotel	670	218	50	4,088	45	5,051

The actual costs and revenues will only be determined after analyzing specific proposals in detail. This section has merely identified the kinds of costs and revenues which would be generated, and has presented some of the relevant considerations and constraints.

1. Conversation with Mr, Ken Mitchell, City of Sunnyvale.
2. City of Berkeley, Proposed Budget 1984-1984 page VII, letter of City Manager, Daniel Boggan, Jr. to Mayor and Members of the City Council, dated May 1, 1984.

The Board of Directors of the City of New York
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 of the 10th inst. in relation to the proposed
 extension of the term of office of the
 members of the Board of Education.

It is respectfully requested that you will
 advise the Board of the result of your
 deliberations on this subject.

Very respectfully,
 The Mayor of the City of New York

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